

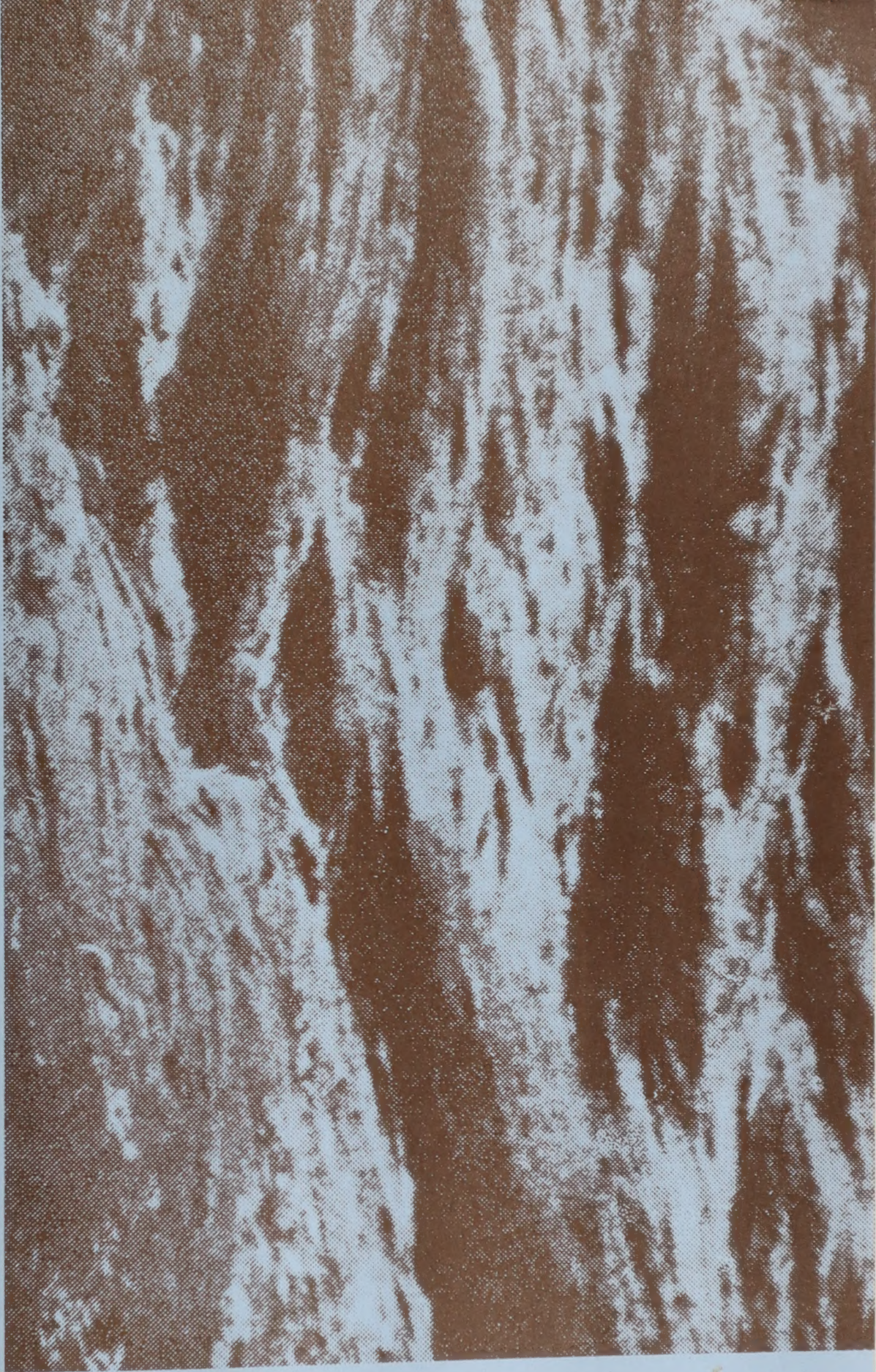
DEPARTMENT OF
COMMERCE
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Commercial Fisheries Abstracts

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

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UNITED STATES DEPARTMENT OF COMMERCE

Maurice H. Stans, *Secretary*

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Robert M. White, *Administrator*

NATIONAL MARINE FISHERIES SERVICE

Philip M. Roedel, *Director*

FOREWORD

The Department of Commerce's National Marine Fisheries Service publishes the monthly journal *Commercial Fisheries Abstracts* as one means of communicating to the fishing industry and allied groups the status of current fishery research. The research includes the biological aspects of fishery science as well as technological studies dealing with aquatic resource supply, harvesting, processing, utilization, and distribution.

Commercial Fisheries Abstracts contains summaries of selected articles from trade, engineering, and scientific journals dealing with the entire spectrum of fishery science. The publication is designed to serve the needs of fishery scientists, engineers, and managers in industry, academic institutions, and government by supplying timely information on current progress in fishery research and technology.

0.2 LECTURES ON MARINE ACOUSTICS.

(9.6) VOLUME II: SELECTED ADVANCED TOPICS IN MARINE ACOUSTICS

Caruthers, Jerald W. (Department of Oceanography, Texas A&M University, College Station, Tex.)
Sea Grant Publication No. TAMU-SG-71-404, vii + 213 pp. (June 1971)

Volume I of these lectures, "Fundamentals of Marine Acoustics," contains background information to the more advanced, specialized topics contained in this second volume. [See Commercial Fisheries Abstracts 24, No. 10, 1 (October 1971) for a list of the major subjects covered in Volume I.] The advanced lectures presented at the short course in Marine Acoustics--and collected in Volume II--were selected because of their emphasis on marine environmental factors and because of their reference to the civil and commercial applications of marine acoustics. The presentations and their authors are as follows:

"Opening Address," Richard A. Geyer (Department of Oceanography, Texas A&M University), pp. 1-3.

"Acoustic Telemetry and Signal Processing," Stephen Riter (Texas A&M University), pp. 4-12. [4 figures, 5 references]

"Wave Theory: Shallow Water Acoustic Propagation," J. C. Novarini (Hydrographic Office, Argentine Navy), pp. 13-26. [5 figures, 1 table, 16 references, 1 appendix]

"Marine Bio-Acoustics," Thomas J. Bright (Oceanography Department, Texas A&M University), pp. 27-59. [28 figures, 1 table, 13 references]

"The Sonar Equations," R. J. Urlick (Naval Ordnance Laboratory, Silver Spring, Md. 20910), pp. 60-72. [2 figures, 3 tables]

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 1 (over)

0.320 SYMPOSIUM ON CHARACTERIZATION OF PROTEINS

(7.51)

Protein Subdivision, Division of Agricultural and Food Chemistry, American Chemical Society
Journal of Agricultural and Food Chemistry 19, No. 4, 581-702 (July-August 1971)

Card A

"Introduction," by Leo A. Goldblatt and Wilda H. Martinez (U.S. Department of Agriculture, New Orleans, La.); p. 581. As the role of the food industry shifts from the preparation to the formulation and fabrication of food, such physical--and functional--characteristics of food as aroma, flavor, texture, and ability to satisfy assume greater importance. The major objective of protein chemistry, then, is an understanding of the relation between protein composition and structure and protein function, whether that function be physiological, physical, or nutritional. The 18 papers constituting this symposium highlight certain developments that have been made in the methods of characterizing proteins.

"Columns for Large-Scale Gel Filtration on Porous Gels. Fractionation of Rape Seed Proteins and Insulin," by Jan-Christer Janson (Institute of Biochemistry, University of Uppsala, Box 531, S-751 21 Uppsala 1, Sweden); pp. 581-588. Very short, large-diametered (e.g., 15 x 45 cm.), compact and stacked, sectioned columns are used. [16 figures, 6 references]

"Membrane Partition Chromatography: A Tool for Fractionation of Protein Mixtures," by William F. Blatt (Applications Laboratory, Amicon Corp., Lexington, Mass. 02173); pp. 589-594. The recognition, theory, and control of macromolecular polarization are discussed and examples of mixture partition with single-cell and tandem-membrane systems given. [15 figures, 2 tables, 12 references]

"Testing for Purity in Proteins by Gel Electrophoresis," by Robert F. Peterson (over)

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 1

0.320 SYMPOSIUM ON CHARACTERIZATION OF PROTEINS

(7.51)

Card B

New York, N.Y. 10021); pp. 632-637. Methods of determining the amino-acid sequences of large proteins are explained. [9 figures, 1 table, 45 references]

"Automated Sequence Analysis of Proteins and Peptides," by Hugh D. Niall (Endocrine Unit, Massachusetts General Hospital, Boston, Mass. 02114); pp. 638-644. Refinements in the phenyl isothiocyanate (Edman) degradation of proteins have resulted in development of efficient, automated procedures for complete sequencing of peptides containing from 2 to 84 residues. [2 figures, 1 table, 38 references]

"Liquid Crystals as They Relate to the Structure of Proteins," by Glenn H. Brown (Liquid Crystal Institute, Kent State University, Kent, Ohio 44240) and Rajendra K. Mishra; pp. 645-652. The structural characteristics and properties of thermotropic and lyotropic liquid crystals are described. [3 figures, 4 tables, 52 references]

"Immunochemical Characterization of Protein in Plant Studies," by Jean Daus-sant (Laboratoire de Physiologie des Organes Végétaux, C.N.R.S., Bellevue 92, France); pp. 653-659. Studies of protein identification, molecular heterogeneity within one enzymatic activity, in vivo protein synthesis, and protein modification are discussed. [7 figures, 77 references]

"Gel Chromatography in Denaturing Solvents: A Method for the Study of Protein Subunit Composition," by Wayne W. Fish (Department of Biochemistry, Medical University of South Carolina, Charleston, S.C. 29401); pp. 660-664. Polypeptide chains of different sizes are separated at the same time their molecular weight is estimated. [6 figures, 1 table, 22 references]

"Protein Aggregation as Studied by Sedimentation Equilibrium. Recent Developments in Instrumentation and Theory," by Harald C. Nielsen (Northern Regional Research Laboratory, U.S. Department of Agriculture, Peoria, Ill. 61604); pp. 665-668. (over)

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 1

0.35

(0.36)

PLATELET LIPIDS: EFFECTS OF A HIGH FAT OR A HIGH CARBOHYDRATE DIET IN PIG PLASMA AND PLATELET FATTY ACID COMPOSITION

Andreoli, V. M. (Institute of Pharmacology, University of Milan, 20129 Milan, Italy), and C. J. Miras (Department of Biological Chemistry, University of Athens, Athens, Greece)

Life Sciences Part II. Biochemistry General & Molecular Biology 10, No. 9, 481-493 (May 8, 1971)

Previous workers have shown that platelet factor 3 is a lipoprotein containing phospholipids with fatty acids of high degree of unsaturation and that its activity depends upon this unsaturation. The present study was carried out to determine if the fatty acid pattern of platelet phospholipid is liable to changes produced by dietary fat. Such information would be useful in correlating fat metabolism, thromboplastic activity of platelets, and evolution of atherosclerosis.

White male rats were fed a high carbohydrate or a high fat diet. The standard mixture contained corn starch, oat groats, soybeans, dry skim milk, meat and bone scraps, and mineral and vitamin mixtures. In the high carbohydrate diet, corn starch was added to the standard mixture to provide 40% of the calories of the total mixture. In the high fat diet, olive oil was added to furnish 40% of the calories of the final mixture. Isocaloric amounts of these two diets were fed to the pigs on a weight basis twice a day. Blood samples were collected from each animal for examination.

According to the authors, the platelets from the blood of animals on a high fat diet showed a decreased percentage level of unsaturated fatty acids in lecithin, (over)

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 1

0.320 (7.51)

Eastern Marketing and Nutrition Research Division, U.S. Department of Agriculture, Philadelphia, Pa. 19118; pp. 595-599. Running the protein at pH 3 and pH 9 and then testing for molecular heterogeneity by sodium dodecyl sulfate electrophoresis is the most reliable method. [2 figures, 47 references]

"Functional Purification of Proteins and Peptides by Affinity Chromatography," by Pedro Cuatrecasas (Departments of Medicine and Pharmacology, The Johns Hopkins University School of Medicine, Baltimore, Md. 21205); pp. 600-604. Agarose bead derivatives to which long hydrocarbon extensions have been linked permit attachment of the ligand at varying distances from the gel matrix backbone. [7 figures, 17 references]

"Quantitative Amino Acid Analysis by Gas-Liquid Chromatography," by Charles W. Gehrke (Agricultural Building, University of Missouri, Columbia, Mo. 65201), Robert W. Mumwalt, and Kenneth Kuo; pp. 605-618. Analytical systems developed over the past 1 year are reviewed. [18 figures, 12 tables, 35 references]

"Disulfide Bonds: Determination, Location, and Influence on Molecular Properties of Proteins," by J. S. Wall (Northern Regional Research Laboratory, U.S. Department of Agriculture, Peoria, Ill. 61604); pp. 619-625. The diverse effects of disulfide bonds on molecular structures and the tools investigators use to explore the subject are surveyed. [15 figures, 1 table, 43 references]

"Methods of Tryptophan Analysis," by Mendel Friedman (Western Regional Research Laboratory, U.S. Department of Agriculture, 800 Buchanan St., Berkeley, Calif. 94740); pp. 626-631. Chromatographic, spectrophotometric, and microbiological methods for analyzing tryptophan are reviewed, the data summarized, and more potentially reliable methods suggested. [7 figures, 96 references]

"Selective Cleavage of Proteins," by Myron J. Waxdal (The Rockefeller University, New York, N.Y. 10021); pp. 632-640. [10 figures, 1 table, 27 references]

(9.6) 2.0

"Sound Propagation in the Sea," by R. J. J. Urick, pp. 73-86. [2 figures] "Scattering and Reverberation," Claude W. Horton, Sr. (Department of Physics and Geological Sciences, The University of Texas at Austin), pp. 87-116. [9 figures]

"Seismic Reflection and Refraction: Travel Time Analysis," Davis A. Fahnestock (Department of Geophysics and Oceanography, Texas A&M University), pp. 117-128. [8 figures, 5 references]

"Twenty Years in Underwater Acoustics: Generation and Reception," T. F. Hueter (Honeywell Inc., Marine Systems Center), pp. 161-169. [2 figures, 3 tables]

"Underwater Acoustics," by Edwin B. Neitzel (Engineering Division, Naval Ordnance Station, Groton, Conn. 06340), pp. 170-178. [2 figures, 3 tables]

"Signal Processing," by Anthony F. Gangi (Department of Geophysics, Texas A&M University), pp. 179-195. [8 figures, 17 references]

"The Ocean," by Ira Dyer (Department of Ocean Engineering, Massachusetts Institute of Technology), pp. 196-212. [11 figures]

BT

Chemical Abstracts 74, No. 17, 86515j (April 26, 1971)

Meo, Wei-Nen, and Clarence Sterling (Dep. Food Sci. Technol., Univ. California, Davis, Calif.)

0.321 PARAMETERS OF TEXTURE CHANGE IN PROCESSED FISH: (3.239) (3.63) CROSSLINKAGE OF PROTEINS

0.35 (0.36)

sphingomyelin, phosphatidylethanolamine, phosphatidylserine, and phosphatidylinositol; the decrease was particularly evident for phosphatidylserine, where the unsaturated fatty acids decreased from 42% to 27%. Of particular interest, the authors point out, was the decrease of arachidonic acid in the platelets from pigs on a high fat diet: from 4.6% to 1.7% in lecithin, from 23% to 13.9% in phosphatidylethanolamine, and from 9.16% to 2.7% in phosphatidylserine.

The authors suggest that the changes in fatty acid pattern of phospholipid platelet reported in this study are due neither to abnormal food intake nor to changes of the de novo system of fatty acid synthesis in the platelet. [6 tables, 17 references]

FTD

FTF

[4 figures, 1 table, 27 references]

Ribosomal satellite DNA from the sperm of the sea urchin *Lytechinus variegatus* was examined by means of saturation hybridization with rRNA, denaturation analysis, and renaturation analysis.

Biochemistry 10, No. 14, 2775-2779 (July 6, 1971)

Patterson, James B., and Darrel W. Stafford (Department of Zoology, University of North Carolina, Chapel Hill, N.C. 27514) (address correspondence to D. W. Stafford)

CHARACTERIZATION OF SEA URCHIN RIBOSOMAL SATELLITE DEOXYRIBONUCLEIC ACID

0.35

(15.7) 0.320

Only reversibly aggregating proteins are covered. [5 figures, 21 references] "Protein Topography by Calorimetry," by Harry D. Brown (Cancer Research Center and University of Missouri, Columbia, Mo. 65201); pp. 669-678. Adiabatic, true isothermal, and pseudo-isothermal (conduction type) instruments of good sensitivity and useful handling characteristics have been designed for the evaluation of spatial relations in proteins. [7 figures, 117 references]

"Electric Birefringence of Macromolecular Suspensions," by Leo D. Kahn (Eastern Utilization Research & Development Division, U.S. Department of Agriculture, Philadelphia, Pa. 19118); pp. 679-682. Application of electric birefringence to dissolved collagen facilitates determination of the rotatory diffusion constant, the dipole moment, and the electric and optic susceptibilities of the suspended particles as well as study of polydispersity. [4 figures, 21 references]

"Characterization of Proteins by Nuclear Magnetic Resonance," by Tetsuo Yamane (Bell Telephone Laboratories, Murray Hill, N.J. 07974); pp. 683-691. The scope, applicability, and limitations of the nmr method for studying the structure of protein molecules are described. [10 figures, 73 references]

"Laser Raman Spectroscopy of Biopolymers and Proteins," by W. Barton Rippon (Division of Macromolecular Science, Case Western Reserve University, Cleveland, Ohio 10104), Jack L. Koenig, and Alan G. Walton; pp. 692-697. Raman spectroscopy is as versatile as and has more advantages than infrared spectroscopy for the study of biological materials. [7 figures, 1 table, 27 references]

"Small-Angle X-Ray Scattering to Determine Protein Conformation," by Robert Pessen (Eastern Regional Research Laboratory, U.S. Department of Agriculture, Philadelphia, Pa. 19118), Thomas F. Kmosinski, and Serge N. Timasheff; pp. 698-702. A new absolute-intensity instrument was developed and applied to the characterization of several proteins. [8 figures, 37 references]

[The American Chemical Society will issue these articles in book form.]

BT

0.5
(1.01111)
(1.80)

THE ISOLATION OF *VIBRIO PARAHAEMOLYTICUS* AND RELATED
HALOPHILIC BACTERIA FROM CANADIAN ATLANTIC SHELLFISH

Thomson, W. K., and Dixie A. Trenholm (Research Laboratories, Food and Drug Directorate, Department of National Health and Welfare, Ottawa, Canada)
Canadian Journal of Microbiology 17, No. 4, 545-549 (April 1971)

Vibrio parahaemolyticus is the most common cause of food poisoning in Japan in summer, most of the outbreaks being attributable to consumption of raw or partially cooked shellfish in such products as shirasu and sushi. It has also been isolated from the waters of Puget Sound and from blue crabs in Chesapeake Bay.

In the present study, 28 strains closely resembling authentic strains from Japan were isolated from unfrozen shellfish that had been gathered in Canadian Atlantic waters and offered for sale at local retail outlets; 6 strains were obtained from shellfish collected and frozen by the Inspection Branch of the Canadian Department of Fisheries and Forestry. The accompanying table shows the results of the investigation.

[1 figure, 2 tables, 27 references]

LB

Type and state of shellfish	Number examined	Number positive
Unfrozen clams	6	6
mussels	14	1
oysters	6	1
periwinkles	7	4
snails	3	1
Frozen clams	19	2
mussels	4	1
oysters	9	0
periwinkles	2	1

0.5
(9.19)

ACCUMULATION AND ELIMINATION OF COLIPHAGE S-13
BY THE HARD CLAM, *MERCENARIA MERCENARIA*

Canzonier, Walter J. (Oyster Research Laboratory, New Jersey Agricultural Experiment Station, Rutgers--The State University, New Brunswick, N.J. 08903)
Applied Microbiology 21, No. 6, 1024-1031 (June 1971)

Earlier workers showed that viral particles persisted after 48 hr. of depuration of clams. This observation raised the question of infectious potential especially because the minimal effective dose for hepatitis and other enteric viruses (shellfish may be probable carriers of enteric viruses) is not well established. The purpose of the present study was to examine the accumulation and elimination of viral particles by hard clams using the bacteriophage S-13 whose host cell is *Escherichia coli* C. At the same time the researchers checked the uptake and elimination of *E. coli*. The clams were exposed to low levels of coliphage S-13 (7 particles/ml.) in running sea water--a concentration one might encounter under natural conditions.

Clams, exposed to coliphage S-13 (7 particles/ml.) in running sea water for several days showed accumulation factors (ratio of clam titer to sea-water titer) of the virus of from 2 to 1,000 times the levels to which they were exposed; the bacterial accumulation was comparable. When the contaminated clams were exposed to virus-free running water, those that were polluted to relatively low levels (100 plaque-forming units/ml.) eliminated most of their bacterial contaminants in 24 to 48 hr. However, the viral contaminants persisted for several days to weeks, provided the temperature remained below the inactivation threshold for the virus. Apparently, most of the virus was sequestered in the digestive gland of the clam.

(over)

0.6
(6.54)

THE PRO-XAN PROCESS: THE DESIGN AND EVALUATION
OF A PILOT PLANT SYSTEM FOR THE COAGULATION AND SEPARATION
OF THE LEAF PROTEIN FROM ALFALFA JUICE

Spencer, Roland R., Alex C. Mottola, E. M. Bickoff, J. Peter Clark, and George O. Kohler (Western Regional Research Laboratory, ARS, U.S. Department of Agriculture, Albany, Calif. 94710)
Journal of Agricultural and Food Chemistry 19, No. 3, 504-507 (May-June 1971)

The new PRO-XAN process is used to produce a protein-xanthophyll concentrate from alfalfa juice and involves four basic steps: (1) expression of the alfalfa juice, (2) dewatering of the dewatered alfalfa, (3) coagulation and separation of the protein and xanthophyll in the juice, and (4) drying of the coagulum. In the present study, a pilot plant coagulation system capable of handling over 90 gallons of plant juice per hour was assembled and evaluated for the preparation of the leaf protein concentrate.

The best starting material was the alfalfa juice prepared from ammoniated freshly chopped alfalfa with pH of 8.0-8.5. This ammonia treatment eliminated carotenoid losses and caused denser and larger curds to form during coagulation (facilitating their separation in the processing operation).
[3 figures, 4 tables, 24 references]

FTP

0.7
(0.6)(5.4)

LOSSES OF VITAMINS AND TRACE MINERALS RESULTING
FROM PROCESSING AND PRESERVATION OF FOODS

Schroeder, Henry A. (Department of Physiology, Dartmouth Medical School, Hanover, N.H., and Brattleboro Memorial Hospital, Brattleboro, Vt.)
American Journal of Clinical Nutrition 24, No. 5, 562-573 (May 1971)

In Recommended Dietary Allowances [(7th rev. ed.) Food and Nutrition Board, National Academy of Sciences-National Research Council Publication 1694 (1968)], 2.0 mg./day of vitamin B₆ is recommended for adults, 2.5 mg./day for pregnant and lactating women, and from 1.4 to 2.0 mg./day for adolescents. For an adult to meet this requirement, he would need to eat a 1-kg. diet (wet wt., exclusive of fluids) having 2 p.p.m. B₆. The Board also recommends from 5 to 10 mg./day of pantothenic acid; based on total weight of the diet, the daily diet would have to contain 5 p.p.m. pantothenic acid. Except for magnesium and iron, daily requirements for no other essential minerals have been set.

Many people believe that modern methods of freezing, canning, processing, and refining foods appreciably reduce the organic and inorganic micronutrients essential to optimal health. These people tend to patronize stores where "health foods" are sold, usually at high prices. Other people commonly use vitamin or vitamin-mineral supplements, a practice that is not universally favored by nutritionists. To determine just how many of the major food sources (vegetables, meats, cereals) provide nutritional levels equal to those recommended, and to find out whether or not processing and storage does cause losses sufficient to lower nutritive levels or less than those recommended, the author analyzed 723 foods and edible products. Among them were 13 seafoods. The results of the analyses on seafood are given on the back of the card.

(over)

Cunningham, Albert E. (Standards and Services Division, U.S. Department of Agriculture, Washington, D.C. 20250)
Food Technology 25, No. 7, 29-30, 32-33 (July 1971)

The article describes a mathematical method for the complete formulation of sausage, a method that is effective in maintaining fat and moisture levels at whatever limits the sausage maker desires. The method is applicable to computer use. [2 tables]

FTF

[30 figures, 8 tables, 5 references]

The author reviews some of the studies carried out at the University of Arkansas on the use of protein, prepared from yeast grown on a petroleum substrate, for feeding poultry. The results indicated that the product can be adapted to poultry diets.

Feedstuffs 43, No. 29, 26-27, 34 (July 1971)

Waldroup, Park (Department of Animal Sciences, University of Arkansas, Fayetteville Ark.)

YEAST PROTEIN FROM HYDROCARBON FERMENTATION

(50.9)

50

optimal function. [7 references]

Most trace metals go with one part or the other of extracted or refined foods. For example, most of the chromium, manganese, cobalt, copper, and molybdenum in raw milk goes into the butter, whereas the magnesium and zinc remain in the skim milk. The author concludes that raw foods will supply adequate amounts of all the micronutrients considered. However, for people who subsist on refined, processed, and canned foods, and for people on reducing diets and older people whose caloric intakes are limited, the intake may be marginal. Since his data do not account for the possible losses during home cooking, he can only conclude that American diets probably do not supply adequate levels of several micronutrients essential for optimal function.

Percent loss	Vitamin B6 (in p.p.m.)		Pantothenic acid (in p.p.m.)	
	Raw	Freeze-dried	Raw	Freeze-dried

Clams	0.80	0.83	1.50	7.20 [sic]
Eel	2.30	1.23	2.50	1.25
Turbot	0.82	0.38	1.30	7.00
Haddock	3.70	1.60	9.70	9.30
Herring	6.60	2.80	8.50	5.20
Mackerel	0.50	0.37	2.50	
Oysters	1.65	1.40	32.00	
Cod (roe)	7.00	3.00	13.00	19.65
Salmon			10.90	5.50
Atlantic sardine			2.80	7.00
Pacific sardine			0.01	6.00
Shrimp			9.00	2.10
Tuna			3.54	3.20
Mean			18.1	6.39
Percent loss			7.3	20.8

(4.7)(0.6)(5.4)

Baumann, Paul, Linda Baumann, and M. Mandel (Department of Microbiology, University of Hawaii, Honolulu, Hawaii 96822, and Department of Biology, The University of Texas, M. D. Anderson Hospital and Tumor Institute at Houston, Houston, Tex. 77025)

Journal of Bacteriology 107, No. 1, 268-294 (July 1971)

This paper describes the properties of a collection (145 isolates) of facultatively anaerobic, gram-negative, marine bacteria that are similar to the marine strains which have been assigned to *Vibrio*, *Aeromonas*, *Pseudomonas*, and *Beneckea*. The authors indicate that most of these organisms should be placed into the re-defined genus *Beneckea*. [30 figures, 7 tables, 60 references]

BT

[30 figures, 7 tables, 60 references]

The authors have found that the bacteria isolated from the water of the Pacific Ocean are more similar to the marine strains which have been assigned to *Vibrio*, *Aeromonas*, *Pseudomonas*, and *Beneckea*. The authors indicate that most of these organisms should be placed into the re-defined genus *Beneckea*. [30 figures, 7 tables, 60 references]

(1971 June) 828-829, No. 2, 153-161 (June 1971)

Forster, J. D. (Department of Microbiology, University of Hawaii, Honolulu, Hawaii 96822, and Department of Biology, The University of Texas, M. D. Anderson Hospital and Tumor Institute at Houston, Houston, Tex. 77025)

MARINE BACTERIA: THE GENUS *BENECKEA*

50

0.5 THE BACTERIOLOGY OF 'SCAMPI' (NEPHROPUS NORVEGICUS).
(8.8) II. DETAILED INVESTIGATION OF THE BACTERIAL FLORA OF FRESHLY CAUGHT SAMPLES

Cann, D. C., G. Hobbs, Barbara B. Wilson, and R. W. Horsley (Torrey Research Station, P.O. Box 31, Aberdeen, AB9 8DG, Scotland)

Journal of Food Technology 6, No. 2, 153-161 (June 1971)

This paper reports on the examination of the bacterial flora of freshly caught scampi obtained at the ports of landing. Such background information is useful in developing quality control methods and standards of quality. Forty-nine samples of freshly landed scampi from 13 ports in the United Kingdom were examined.

Total counts at 20° C. ranged from 3.55×10^3 to 2.25×10^6 bacteria per gram, and at 37° C. they ranged from 3×10^1 to 2.73×10^6 . *Corynebacterium* were the most predominant in the flora; strains of *Achromobacter-Acinetobacter* group and the *Pseudomonas*, *Cytophaga*, and *Micrococcus* genera were present.

[1 figure, 1 table, 38 references]

FTF

[30 figures, 7 tables, 60 references]

The authors have found that the bacteria isolated from the water of the Pacific Ocean are more similar to the marine strains which have been assigned to *Vibrio*, *Aeromonas*, *Pseudomonas*, and *Beneckea*. The authors indicate that most of these organisms should be placed into the re-defined genus *Beneckea*. [30 figures, 7 tables, 60 references]

(6.1) 50

0.7 (0.321) PROTEIN DEPRIVATION: COMPARATIVE RESPONSE OF HAIR ROOTS, SERUM PROTEIN, AND URINARY NITROGEN

Bradfield, Robert B. (Department of Nutritional Sciences and Agricultural Extension Service, University of California, Berkeley, Calif. 94720) American Journal of Clinical Nutrition 24, No. 4, 405-410 (April 1971)

This study evaluates the practicality of using hair root changes as an early indicator of protein-calorie malnutrition. When protein-free liquid diets, complete in all other nutritive respects, were fed to six male volunteers, significant and consistent hair root changes appeared within 11 days. Although the growth phase did not change, the diameter of the bulb decreased and bulb atrophy and dyspigmentation increased with time; most of the atrophied bulbs had no sheaths. Serum protein and albumin levels remained normal, but urinary nitrogen reached minimum values by the eleventh day. The hair root changes were reversed when protein was added to the diet.

[1 figure, 2 tables, 9 references]

LB

(1961) '13 (May 31, 1971) 115545b
Gesellschaft fuer Strahlenforschung G.m.b.H.
French Demande (patent) 2,016,786
Chemical Abstracts 24, No. 22, 115545b

0.8 (0.19) DECOMPOSITION OR INCINERATION OF ORGANIC MATERIALS, ESPECIALLY BIOLOGICAL SUBSTANCES SUCH AS MEAT, FISH, AND FLOUR, USING A WET PROCESS

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 5

0.8 (3.15) EFFECTS OF GAMMA IRRADIATION ON WASTE ACTIVATED SLUDGE

Baney, George Michael Thesis, 142 pp. (1970) (Purdue University, Lafayette, Ind.). University Microfilms Order No. 71-2551. Nuclear Science Abstracts 25, No. 11, 2430, (June 15, 1971)

The disinfecting effect of γ radiation at doses ranging from 50,000 to 1,000,000 rads at a dose rate of about 6,000 rads/min. on biological waste activated sludge was evaluated using the coliform and fecal streptococcal groups of microorganisms. The conditioning ability of irradiation for vacuum filtration was investigated using irradiation alone and in combination with ferric chloride and in combination with two organic monomers. Settability studies were carried out in 1,000-ml. graduated cylinders, and the sedimentation rates of the sludges were recorded. The chemical oxygen demand and orthophosphate content of the supernatants were determined as was the sedimentation inducing effect of irradiated supernatant on nonirradiated sludge. Three 3-liter digesters were used to evaluate the anaerobic digestibility of irradiated sludge. During the experiment two of the digesters were fed sludge irradiated at 150,000 rads and one digester served as the control. The digesters were operated at various feed rates, 0.023 to 0.230 lb VS/cu ft/d, and various detention times, 6 to 15 d. Disinfection studies showed that the coliform and fecal streptococcal groups had differences in radiosensitivity. The initial coliform population was reduced by 99.99% by a dose of 150,000 rads and the initial fecal streptococci population was reduced by 95%. Irradiation alone only slightly improved the filterability of sludge. When used in combination with ferric chloride, irradiation produced an increase in the solids concentration of the filter cake but also increased the time necessary to dewater the

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 5

(over)

0.8 (9.19) ULTRASONIC DISPERSAL OF ACTIVATED SLUDGE FLOCS

Williams, A. R., D. A. Stafford, A. G. Calley, and D. E. Hughes (Microbiology Department, University College, Newport Road, Cardiff, CF2 1TA, Wales) Journal of Applied Bacteriology 33, No. 4, 656-663 (December 1970)

Microorganisms, usually bacteria, are the biologically active components of the sludge flocs so intimately associated with the treatment of industrial effluents. These organisms provide the means for degrading the toxic components of such wastes. Attempts to break up flocs with such techniques as enzymic breakdown or surface-active agents have been relatively unsuccessful. Use of ballotini beads in a Mickie disintegrator has been reported by the Water Pollution Research Laboratories (London: H.M.S.O. (n.d.)) to promise some degree of success; however, experiments by the present authors have shown that hydrodynamic shear forces of this order will not increase viable cell counts to any appreciable extent. The shear forces and shock waves generated around transient or collapse-type cavitation bubbles, though sufficient to completely disperse flocs, are so great that many bacteria are completely disrupted. Thus the resulting bacterial counts are falsely low.

The ultrasonic device described here generates acoustic microstreaming around a thin wire oscillating transversely in a liquid. The hydrodynamic shear forces produced near the wire can be continuously varied to cover values less than those given by ballotini beads or as high as those generated around collapse-type cavitation bubbles. Thus a shear-force value can be selected that will produce maximum floc dispersion in a given time without destruction of the component microorganisms. [5 figures, 3 plates, 8 references]

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 5

1.0114 (9.2) THE CALIFORNIA FRESH AND FROZEN FISHERY TRADE

O'Rourke, A. D. (Agricultural Economics, Washington State University Pullman, Wash.), and D. B. De Loach (California Agricultural Experiment Station, University of California, Davis, Calif.) California Agricultural Experiment Station, Bulletin 850, 79 pp. (June 1971) (University of California, Davis, Calif.)

This report describes the structure of the California fresh and frozen fish and shellfish industry from the fishing through the retailing operations. The authors examined and analyzed the interrelationships between the structure of the industry and the industry's past and present performance and projected the industry's future developments. The authors' analysis indicated a real need for revitalization of the California industry. This revitalization will require an infusion of new capital and managerial talent, as well as an elimination of many of the inefficient firms that now exist because of unduly favorable prices and margins. [11 figures, 28 tables; 99 references]

FTP

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 5

1.013 LA PESCA EN EL LAGO DE MARACAIBO
[FISHING IN LAKE MARACAIBO]

Nemoto, Takeshi

Informe Técnico No. 24, 55 pp. (1971) (In Spanish; English summary)

The fisheries of Lake Maracaibo are different from the coastal fisheries of Venezuela for several reasons. For one, the northern part of the Lake, because of the broad channel that connects it and the Gulf of Venezuela, is inhabited by water species, whereas the southern part, where many rivers and abundant rainfall keep the salinity quite low, is inhabited by fresh-water species. For another, the occasional leakage from the numerous oil wells and rigs in the Lake, especially in the Bolivar region, create serious problems for the fisheries. The author points out the peculiarities of the Lake's fisheries, describing the different types of gear and vessels used in the Lake, giving details of the construction of various types of gear, and commenting on their use and the superiority of some of them for particular fisheries. He describes the states and districts bordering the Lake in terms of their fishing populations, the species landed on their coasts, and the end uses to which the landed fish are put.

[51 figures, 10 tables, 1 reference]

LB

COMPUTER PREDICTION OF FOOD STORAGE

0.6
(3.2491)

Karel, M. (Department of Nutrition and Food Science, Massachusetts Institute of Technology, Cambridge, Mass.), S. Mizrahi (Department of Food and Biotechnology, Israel Institute of Technology, Haifa, Israel), and T. P. Labuza (Modern Packaging 44, No. 8, 54-58 (August 1971))

In an earlier study (1970), the authors predicted the extent of browning in packaged dehydrated cabbage stored at 37° C. at a constant humidity. The prediction was based on functions relating extent of browning to duration of storage and to moisture content; moisture content within the food to partial pressure of water; and change of moisture content in the samples to properties of the package, the food, and the environment. The information was combined in a mathematical model, and an iteration procedure over time intervals of 0.1 day was programmed for an IBM 360 digital computer. The procedure permits determination of the rate of browning at the beginning time interval, the moisture increase due to the browning itself, the water activity in the package, the moisture increase due to water-vapor permeation, and the corrected moisture constant. Repetition of the procedure gives the changes that occur during the next time interval.

This procedure has been applied to packaging materials whose permeability constant does not vary with water activity or relative humidity. In the present report, the method is applied to materials (uncoated film, film coated on one side, and films coated on both sides) in which permeability is a function of relative humidity. Using this computer technique permits corrections to be made for permeability change with time as inside relative humidity changes. In addition, when laminated (hydrophilic-coated) films are studied, the effect of the thickness of the hydrophobic portion can be taken into account.

[7 figures, 8 references]

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0.8 The addition of acrylonitrile and methyl methacrylate to the sludge caused cake. The sludge to be congealed upon irradiation. Sedimentation experiments showed that a radiation dose of 50,000 rads generally increased the average settleability of the sludge by a factor of 1.9 over the control samples at the end of a 90-min period. Irradiation caused the chemical oxygen demand and orthophosphate content of the supernatants from settleability tests to increase at a rate proportional to the radiation dose. At a dose of 600,000 rads the average chemical oxygen demand increase was 435 ± 75 mg/l; the average orthophosphate increase was 13.7 ± 4.1 mg/l. Experimentation showed that supernatant from irradiated sludge could cause increased sedimentation of non-irradiated sludge. Digestion studies showed that the pH, alkalinity, volatile acids concentration, rate of gas production, and evolved gas composition did not vary significantly among the three digesters during the period of experimentation. (B) Diss. Abstr. Int., 7, 1972, 10, 1972, 11, 1972, 12, 1972, 1, 1973, 2, 1973, 3, 1973, 4, 1973, 5, 1973, 6, 1973, 7, 1973, 8, 1973, 9, 1973, 10, 1973, 11, 1973, 12, 1973, 1, 1974, 2, 1974, 3, 1974, 4, 1974, 5, 1974, 6, 1974, 7, 1974, 8, 1974, 9, 1974, 10, 1974, 11, 1974, 12, 1974, 1, 1975, 2, 1975, 3, 1975, 4, 1975, 5, 1975, 6, 1975, 7, 1975, 8, 1975, 9, 1975, 10, 1975, 11, 1975, 12, 1975, 1, 1976, 2, 1976, 3, 1976, 4, 1976, 5, 1976, 6, 1976, 7, 1976, 8, 1976, 9, 1976, 10, 1976, 11, 1976, 12, 1976, 1, 1977, 2, 1977, 3, 1977, 4, 1977, 5, 1977, 6, 1977, 7, 1977, 8, 1977, 9, 1977, 10, 1977, 11, 1977, 12, 1977, 1, 1978, 2, 1978, 3, 1978, 4, 1978, 5, 1978, 6, 1978, 7, 1978, 8, 1978, 9, 1978, 10, 1978, 11, 1978, 12, 1978, 1, 1979, 2, 1979, 3, 1979, 4, 1979, 5, 1979, 6, 1979, 7, 1979, 8, 1979, 9, 1979, 10, 1979, 11, 1979, 12, 1979, 1, 1980, 2, 1980, 3, 1980, 4, 1980, 5, 1980, 6, 1980, 7, 1980, 8, 1980, 9, 1980, 10, 1980, 11, 1980, 12, 1980, 1, 1981, 2, 1981, 3, 1981, 4, 1981, 5, 1981, 6, 1981, 7, 1981, 8, 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1.82 ON THE BIOCHEMICAL, ECOLOGICAL AND DISTRIBUTIONAL STUDIES
(1.0155) OF THE HEN CLAM, MACRATA SULCATARIA REEVE

Park, Dong-Kun, Woo-Hyun Choi, Sung-Je Park, Hong-Jo Park, and Sang-Ae Kim
Bulletin of Fisheries Research & Development Agency No. 5, 17-35 (1970) (In Korean;
figures, tables, and summary in English)

These studies were conducted to determine the extent of the hen clam resources
along the western coast of Korea, the sustainable yield of the resource, and the
season during which the nutritive value of the clams was optimum. The ecological
survey showed that 2- to 3-year-old clams were 4.8 cm. in shell length, 3.6 cm. in
shell height, 2.4 cm. in shell width, and 23.2 g. in weight.

The biochemical study showed that the moisture content ranged from 79.8% in
May and June to 82.9% in January, averaging over 82% during the winter months;
the crude protein content ranged from 12.1% in December and January to 13.8% in
August, averaging about 13.3% from April through September; lipid content ranged
from 0.9 and 0.8% in December and January, respectively, to 1.8% in April, aver-
aging about 1.26% throughout the year; total sugar content ranged from mere traces
in January and February to 3.2% in May, averaging 1.2% throughout the year; crude
ash content ranged from 2.5% in April and May to 4.2% in January, averaging over
3.5% from September to February (sand was the major fluctuating component--other
minerals changed little with the season); pH ranged from 6.2 in August and Sep-
tember to 6.8 in March; and "extractive as one of the notable solubles" ranged
from about 5% in the quarter from December to March to about 8% in the months be-
tween April and October. Sixteen amino acids were found, in the following amounts
(mg.%): lysine, 592; histidine, 145; arginine, 701; aspartic acid, 733; threonine,
(over)

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO. 11 PAGE 7

1.85 LENGTH-WEIGHT RELATIONS FOR THREE COMMERCIALY IMPORTANT
(9.125) PENAEID SHRIMP OF THE GULF OF MEXICO

Fontaine, C. T., and R. A. Neal (Bureau of Commercial Fisheries, Biological Labora-
tory, Galveston, Tex. 77550)
Transactions of the American Fisheries Society 100, No. 3, 584-586 (July 1971)

Although several authors have provided length-weight relations for penaeid
shrimp (Anderson and Lindner, 1958; Chin, 1960; Kutkuhn, 1962; and McCoy, 1968),
most have not provided comparisons between sexes or species, and have not accounted
for seasonal variation. The present study was initiated to provide relations gen-
erally applicable to a wide size range of brown shrimp, Penaeus aztecus Ives,
white shrimp, Penaeus setiferus (Linnaeus), and pink shrimp, Penaeus duorarum
Burkenroad, of each sex on a year-round basis.

[3 tables, 4 references]

Reprinted in part

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO. 11 PAGE 7

1.9 [CONTRIBUTION TO THE KNOWLEDGE ABOUT ALEPISAUROS (PISCES)
(1.12) IN THE EQUATORIAL AND SOUTH TROPIC PACIFIC]
CONTRIBUTION A LA CONNAISSANCE DES ALEPISAUROS (PISCES)
DANS LE PACIFIQUE EQUATORIAL ET SUD-TROPICAL

Grandperrin, R., and M. Legand (Centre O.R.S.T.O.M. de Nouméa, B.P. 4, Nouvelle-
Calédonie)
Cahiers O.R.S.T.O.M. Série Océanographie 8, No. 3, 11-34 (1970) (In French; English
abstract)

Lancet fish (Alepisaurus sp.) represent an important percentage of longline
catches, in extreme cases almost 80%. The authors examined their stomach contents
and compared their hook rates, habitats, and food with those of tuna, particularly
with those of Thunnus alalunga. Because of the many similarities found, they sug-
gest that Alepisaurus could have a detrimental effect on the tuna fisheries
throughout the world.

[9 figures, 11 tables, 40 references]

LB

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO. 11 PAGE 7

2.1121 GEAR AND TECHNIQUES EMPLOYED IN THE GULF OF MEXICO SHRIMP FISHERY
(1.85) (ENGINS ET TECHNIQUES EMPLOYES DANS LA PECHE DE LA CREVETTE
DU GOLFE DU MEXIQUE)

Klima, Edward F., and Robert S. Ford (Bureau of Commercial Fisheries, Exploratory
Fishing and Gear Research Base, Pascagoula, Miss.)
Report NOAA-71031514, 29 pp. (1970) Proceedings of Conference on Canadian Shrimp
Fishery, held at St. John, New Brunswick, Canada, October 27-29, 1970. Avail-
able from the National Technical Information Service, Operations Divisions,
Springfield, Va. 22151, Order No. COM-71-00327, PC\$3.00; Microfiche 954.
Government Reports Announcements 71, No. 10, 64 (May 25, 1971)

Present shrimp harvesting gear is reviewed, specifically sizes and types of
nets with a description of the equipment used for capturing live shrimp. Royal-
red shrimp fishing and gear are discussed and modifications which could help in-
crease production are presented. The BCF-developed electric shrimp trawl is de-
scribed and its potential discussed. (Author)

Reprinted

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO. 11 PAGE 7

1.87
(9.12)

AGGREGATIONS OF SPINY SEA URCHINS, DIADEMA ANTILLARUM,
AS SHELTER FOR YOUNG SPINY LOBSTERS, PANULIRUS ARGUS

Davis, Gary E. (Everglades National Park, P.O. Box 279, Homestead, Fla. 33030)
Transactions of the American Fisheries Society 100, No. 3, 586-587 (July 1971)

While conducting an investigation of the spiny lobster population, Panulirus argus, in connection with the TEKTYPE I project in Greater Lameshur Bay, St. John, U.S. Virgin Islands, numerous young lobsters, P. argus, were observed in close association with groups of spiny sea urchins, Diadema antillarum (Clifton et al., 1970).

The lobsters associated with Diadema were slightly larger than ones reported associated with a sponge of the genus Callyspongia by Khandker (1964), and probably represented juveniles in their first season of demersal growth. Several exuviae found near Diadema groups, in addition to the size range of the lobsters, suggest that the relationship between the wandering Diadema and the young lobsters may be a relatively long-term one. As the Diadema groups graze across the grass bed, the lobsters move with them, thus gaining access to the entire grass bed and consequent food sources with physical protection from predators until they are large enough to establish and defend dens in the reef (Clifton et al., 1970). The young lobsters invariably returned to the Diadema groups when removed and released several meters from them. They stayed close to the Diadema at all times, and attempted to burrow under them when approached....

The Diadema association provides recruits with protection from predation during a crucial period in their life cycle. A thorough investigation of this association may provide insight into the management of spiny lobster populations and offers a rationale for conserving the often maligned Diadema.

[1 figure, 3 references]
Reprinted in part

(5510.1) 28.1

148; serine, 128; glutamic acid, 751; proline, 167; glycine, 344; alanine, 281; valine, 154; methionine, 86; isoleucine, 166; leucine, 245; tyrosine, 91; and phenylalanine, 140. [12 figures, 11 tables, 15 references]

LB

Author's abstract

[23 figures, 3 tables, 16 references]

The report summarizes developments concerning the calico scallop resource of the southeastern United States. A brief background is provided followed by a description of the fishery in North Carolina and subsequent expansion to the Florida grounds. Included are sections dealing with developments in the fishery, quality of the scallop and its parasites. A chronological review is made of the development of processing machinery; recent industry activity is summarized; and cooperative technical Bureau of Commercial Fisheries (now National Marine Fisheries Service) assistance is described.

Cummins, Robert, Jr. (NOAA, National Marine Fisheries Service, Exploratory Fishing and Gear Research Station, Brunswick, Ga. 31520)
Special Scientific Report-Fisheries No. 627, 111 + 22 pp. (June 1971)

1.84
(1.0116)
CALICO SCALLOPS OF THE SOUTHEASTERN UNITED STATES, 1959-69

2.06

JELLIED FISH PRODUCT

Kyowa Hakko Kogyo Co. (pat.)
Japanese Patent 2384/71
Food Technology 25, No. 7, 78 (July 1971)

A soy protein derivative is added to jellied fish meat products to improve their taste and gel strength.

FTP

LB

With text and photographs, this book describes 428 basic knots. It has sections on braiding, splicing, pointing, net making, sewing canvas, and blocks and tackles.

National Fisherman 51, No. 2, 4S (June 1970)

Graumont, Raoul
International Marine Publishing Company, 208 pp. (u.d.) \$3 hardbound, \$1.75 soft-bound

2.111
(9.6)(2.114)

HANDBOOK OF KNOTS

2.05
(0.5)

TECHNICAL NOTE: TEMPERATURE CONTROL OF FOOD

Peacock, J. W., and E. E. Fitzgerald (Lyons Central Laboratories, London W.14, England)
Journal of Food Technology 6, No. 1, 107-109 (March 1971)

Certain food products provide a good medium for bacterial growth and, therefore, there is a risk of hazard to health. Such foods should be kept at a temperature at which microorganisms will not grow. Ordinarily, the risk of hazard to health is considered not to exist if such foods are maintained outside the temperature range of 10° C. (50° F.) to 62.7° C. (145° F.). But few published data exist to support the choice of these temperature limits. The present technical note presents some data on the growth rates of certain pathogenic bacteria within the temperature ranges of 10° C. (50° F.) to 21° C. (70° F.) and 49° C. (120° F.) to 62.7° C. (145° F.). The organisms used were Salmonella heidelberg, Salmonella typhimurium, Staphylococcus aureus, and Staphylococcus sp. Appropriate laboratory media were used.

All four microorganisms failed to multiply at 50° C. (122° F.) or higher temperatures; the organisms die out steadily at these temperatures. At 21° C. (70° F.), the shortest generation time, in the first 8 hr., for any of the strains was 4 hr.; therefore, the count had increased fourfold.

These results indicate the need for more careful consideration before control of the temperature of storage of food is imposed within limits that may not be justifiable on scientific evidence.

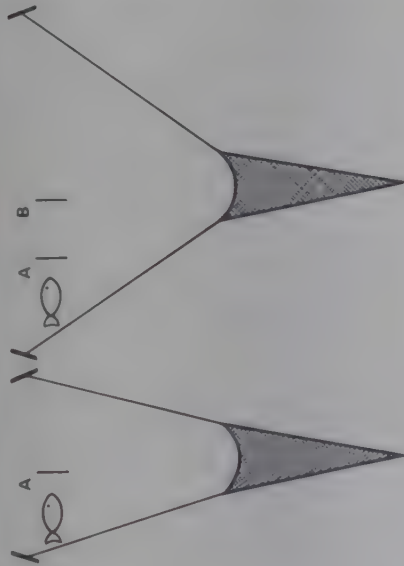
[4 tables]

FTP

Noel, H. S.
World Fishing 20, No. 6, 33 (June 1971)

In an earlier article on fish behavior, World Fishing published a diagram

showing the accepted best angle of a trawl bridle--about 16 deg. An engineer from the British White Fish Authority, upon being asked why this angle, offered the following explanation. Rotom fish react to the arrival of the trawl door and bridle by swimming away--into the path of the net. The fish can swim only so far (to point A in the diagram) in the time that elapses between being scared and being trapped by the wings. If the bridle angle is 16 deg. or less, point A will be in the path of the trawl. But if the bridle angle is exceptionally wide, the fish must swim distance A plus B to be in the trawl's path--a distance only very fast swimming fish can manage in the time that elapses.



Anonymous
Fishing News No. 3026, 9 (June 18, 1971)

Handling ice in the fish room with ax and shovel, as has been customary, can be back-breaking work. But handling it mechanically is difficult because the condition of the ice can vary greatly with storage time, with air temperature during loading and storage, and with the manufactured quality of the ice itself. Moreover, not only do different types of ice have different mechanical properties but the input and output positions constantly change as stowage progresses and ice is used up.

Now the Industrial Development Unit (IDU) of the British White Fish Authority has shown how the work of transporting ice between the ice store and the fish pound can be lightened by use of a simple screw conveyor. True, the ice still has to be chopped and shoveled into the conveyor's feed hopper and into the pounds or boxes from the point of discharge. But the distances have been appreciably reduced. In addition, not only are all large jagged pieces broken up but the crushed ice becomes granulated and much more suitable for mixing with fish as it passes through the screw.

The trial conveyor installed by IDU on the side trawler *Volesus* was adapted from similar units used to handle grain. It is 3 m. long, 100 mm. in diameter, and small and light enough to be moved easily from pound to pound. Its conveying rate is 100 kg./min. An a.c. drive supplies the rated input power of 1.1 kw., however, since electrical supply cable is vulnerable to damage, IDU is considering substitution of air motors. Also, since the mild steel from which the unit is made

(over)

Hatfield, M. (White Fish Authority, Industrial Development Unit), and Gloria Wilson
Fishing News No. 3030, 6-8, 10 (July 16, 1971)

"Three Years With the Type 17," by Gloria Wilson.

The first production model of the Shetland gutting machine (invented by James Smith of Scalloway, Shetland; developed by the British White Fish Authority; and manufactured by C. F. Wilson & Co. (1932) Ltd., 166, Constitution Street, Aberdeen AB9 2RA, Scotland) was installed in November 1968 aboard the seiner *Onam*. It is still in use. With this model, one operator can gut from 30 to 45 fish up to 17 inches long per minute. The advantages of the machine are reviewed and its use on smaller vessels of various types is illustrated. Modifications in the power unit that make for more efficiency at less cost are discussed--e.g., a power unit that drives both the gutting machine and the power block on a new seine netter.

"First Year With the Type 28," by M. Hatfield.

The prototype of the Type 28 Shetland gutting machine, a scaled-up adaptation of the highly successful Type 17, was installed aboard the 185-ft. stern trawler *C. S. Forester* in June 1970. It is still operating. During its first year, it gutted about 750 tons of fish on 14 voyages. Observations of many thousands of these fish showed that between 75 and 90% were perfectly gutted, between 2.5 and 15% had a small shred of gut at the throat, between 1.5 and 12% had a small shred of gut at the vent, less than 1% was badly gutted, and less than 1% was damaged. These results are roughly equivalent to those from hand gutting by a reasonably competent crew. However, unlike hand gutting, machine gutting invariably removes

(over)

Kutakov, B., N. Kudryavtsev, and V. Savrasov
Trans. of mono. Promysel Ryby Raznoglubinnymi Tralami, Kaliningrad, 41 pp. (1968)
M. Ben-Yami (translator)

Special Foreign Currency Science Information Program (SFCIS-Int (TT-7054026), 37 pp. (1971). Available from the National Technical Information Service, Operations Division, Springfield, Va. 22151. Order No. TT-70-54026, PC\$3.00; microfiche 954

Government Reports Announcements 71, No. 12, 52 (June 25, 1971)

Contents:

Types of vessels employed in midwater trawling;
Trawlnets for midwater fishing;
Preparing the gear;
Most frequent defects in midwater trawls;
Troubleshooting;
Trawling for herring;
Trawling off Africa;
Midwater trawling for surface schools without trawl-depth recorders;
Hauling heavy catches;
Discharging heavy catches from codend.

Reprinted

2.12 DISTRIBUTION OF SOME COASTAL PELAGIC FISHES IN THE WESTERN ATLANTIC

Klima, Edward F. (National Marine Fisheries Service, Exploratory Fishing and Gear Research Base, P.O. Drawer 1207, Pascagoula, Miss. 39567)
Commercial Fisheries Review 33, No. 6, 21-34 (June 1971)

The author summarizes available information on the distribution and abundance of some coastal pelagic fishes in the western Atlantic. The species included scaled sardine, Spanish sardine, round herring, silver anchovy, butterfish, chub mackerel, bumper, rough scad, round scad, and thread herring.

FTF

[12 figures, 2 tables, 18 references]

Extractor: LB

To ensure that the forward movement of fish on the grading grid is smooth regardless of the fish's orientation, a vibrator transmits longitudinal oscillations to the grid at >15 Hz and with an axial amplitude of from 1 to 10 mm. Thus the fish are made to glide along the grid--rather than being flung forward--till they reach the opening corresponding to their size. The gliding can be made even smoother if the fish are sprayed with water as they move along.

Erickson, D. (Arencio AB) (pat.)
West German Patent Application 1,913,477 (1969) (In German)
Food Science and Technology Abstracts 3, No. 3, 3R98, 500 (March 1971)

2.3 PROCESS FOR GRADING FISH (VORRICHTUNG ZUM SORTIEREN VON FISCHEN)

FTF

the fishes' heart and breaks up the large blood vessels at the spine. The developers believe this type of cleaning can but improve fish filler quality, especially on factory and freezer trawlers.

Time measurements made on many crewmen over periods of an hour or more have shown that a person with even slight experience in handling fish can feed the machine continuously at a rate of between 28 and 32 fish per minute, or about 1,500 fish an hour--about the same rate as a good squad of six can gut. Since the average fish of the size suitable for the machine (from 15 to 18 inches long) weighs 5.5 lb., ungutted, the throughput of the machine is about 3.5 tons an hour. The advantages of the machine include the obvious savings in time and personnel, a savings that leads in turn to the utilization of smaller fish that the crew might not otherwise have time or inclination to gut; and the overall improvement in fish quality as a result of quicker processing and stowing. The disadvantages so far identified are: (1) (1) haddock less than 22 in. long tend to be torn, and any fish heavy with roe is poorly gutted (White Fish Authority engineers are working to eliminate these defects, neither of which they consider serious); (2) the machine breaks up the livers and mixes them with the guts (this defect, though not unique to the Shetland gutter, is serious, for if 80% of the catch is cod, say, the total amount to be dealt with may be as much as 50%); (3) the machine is virtually useless without the associated conveyors, washers, properly positioned feed bins, and adequate maintenance and operating space.

Extractor: LB

[see figure 1]

2.3 CLEANING APPARATUS FOR FISH

Messer, Thomas V. (747 Olympic Ave., Edmonds, Wash.) (pat.)
U.S. Patent 3,590,423
Official Gazette of the U.S. Patent Office 888, No. 1, 14 (July 6, 1971)

This cleaning apparatus for fish may be attached to the gunwale of a small fishing boat.

FTF

Its length is now in service, is as a typical stern trawler. The depth is 22 ft. The hull is of round bilge form. The breadth is 3.51 m. and molded depth, 3.51 m. The forward fish room has a 90.8 m³ capacity. The vessel is powered by a geared diesel engine producing 465 b.hp. at 1,100 rev./min. and driving a 1.1 m. diameter, controllable-pitch propeller. Trial speed was 10.5 knots. It carries a crew of four with space for an additional member. The Merrydale will be used in comparative trials with a side trawler of the same size and machinery to determine which is more efficient.

(1971 June) 631 '119 No. 25 Fishery News

Anonymous

2.114 LINE FOR RECEIVING AND SORTING FISH ACCORDING TO SPECIES

(1971 '2) 511 '2

Kozyrchuk, L. P., G. P. Khimchenko, L. P. Zalecin, A. V. Volkov, and A. V. Gortikov (pat.)
U.S.S.R. Patent 269,448 (1970) (In Russian)
Food Science and Technology Abstracts 3, No. 3, 3R120, 503 (March 1971)

To make for compactness and to ensure that the quality of the fish being sorted is maintained, hoppers for collecting the fish are placed immediately below the sorting conveyor; transfer scoops for feeding the fish onto belt conveyors are attached. In addition, the receiving and sorting line has a device for cooling sea water and a piping system that feeds the cooled water into the hoppers.

Extractor: LB

tends to develop rust spots and stain the first 10 kg. or so of ice whenever the conveyor is restarted after a stoppage of more than an hour or so, IDU is considering a conveyor made of aluminum and copper. The use of noncorrosive material would, of course, increase the cost of the conveyor, which at present is less than \$500. Even with the grain conveyor, providing an a.c. motor (including the a.c. motor) in an existing side trawler may bring installation costs to as much as \$500.

[2 figures]

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2.3	11	PAGE	11	NO	42	VOL	ABSTRACTS	COMMERCIAL FISHERIES ABSTRACTS
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2.3 BELT CONVEYOR FOR FIXING THE SKIN SIDE OF FISH OR FILLETS SO THAT THEY DO NOT SLIP (TRANSPORTBAND ZUM UNVERRÜCKBAREN FIXIEREN DER HAUTSEITE VON FISCHER ODER FISCHFILETS)

Michael, J. (Nordischer Maschinenbau Rudolf Baader) (pat.)
West German Patent Application 1,579,423 (1969) (In German)
Food Science and Technology Abstracts 3, No. 3, 3R129, 504 (March 1971)

The surface of the belt conveyor is shaped like the scales of a fish, and it closely fits the shape of the fish. It may include rows of teeth, and it may be concave and flexible so that it will fit the shape of the fish more closely.

Extractor: LB

Two walls still on the conveyor form a wide, V-shaped inlet-opening that has an aligning and positioning effect on prawns that have become misaligned or crooked by the friction exerted on the conveyor.

(1671 March) 502 '63, No. 3, 3R126, 504 (March 1971)
Food Science and Technology Abstracts 3, No. 3, 3R126, 504 (March 1971)
West German Patent Application 1,579,423 (1969) (In German)
(pat.) (pat.)
Woerd, V. D. (NV Machinefabriek B & S Bedrijven) (pat.)

2.3 SETTING FISH FOR ECONOMIC SEVERING OF THE HEADS
(VORRICHTUNG ZUM FESTHALTEN UND ZUR ERNEUTEN ABGABE VON GARNELEN AN DEN FÖRDERER EINER GARNELENBEARBEITUNGSMASCHINE)
OF A PRAWN PROCESSING MACHINE
DEVICE FOR SECURING PRawns AND DELIVERING PRawns TO THE CONVEYOR

(85'1) 512

Korzhov, V. N., Yu. P. Lavrov, P. D. Smirnov, V. F. Kosov, and N. A. Vetrugin
(Tsentrall'noe Konstruktorskoe Byuro Nauchno-Issledovatel'skogo i Konstruktor-skogo Instituta Mekhanizatsii Rybnoi Promyshlennosti, U.S.S.R.) (pat.)
U.S.S.R. Patent 271,753 (1970) (In Russian)
Food Science and Technology Abstracts 3, No. 3, 3R125, 504 (March 1971)

The device ensures increased setting accuracy by fixing the fish at the shoulder bone. A fixing stop and a spring-loaded clamp for the head are so fitted that a reciprocating movement is possible. Feeder mechanisms ensure the counter movement.

Extractor: LB

In the processing line described, each prawn must be handled individually, but the device facilitates removal of those that are damaged and those adhering to other prawns. It consists of a V-shaped stop that moves the prawns sideways from the conveyor onto a support divided into two parts. The upstream part can be downwards so that the the undesired prawns can be sorted out. Extractor: LB

Woerd, V. D. (NV Machinefabriek B & S Bedrijven) (pat.)
West German Patent Application 1,512,092 (1969) (In German)
Food Science and Technology Abstracts 3, No. 3, 3R117, 503 (March 1971)

2.3 DEVICE FOR SORTING OUT UNDESIRABLE PRAWNS OR PARTS OF PRAWNS FROM THE CONVEYOR OF A PRAWN PROCESSING MACHINE (VORRICHTUNG ZUM AUSSORTIEREN UNERWÜNSCHTER GARNELEN ODER GARNELENTHEILE VOM FÖRDERER EINER GARNELENBEARBEITUNGSMASCHINE)

(1.85) 512

2.3 ASSEMBLY FOR FEEDING FISHES INDIVIDUALLY AND IN PHASES (VORRICHTUNG ZUM TAKTWEISEN ENTFEHNEN EINES EINZELNEN FISCHES)

Bartels, A. (Nordischer Maschinenbau Rudolf Baader) (pat.)
West German Patent Application 1,293,416 (1969) (In German)
Food Science and Technology Abstracts 3, No. 3, 3R119, 503 (March 1971)

Fish of various sizes are fed head first into a magazine at the front end of a feed trough. The head of each fish is kept in a predetermined position by a swinging stop until the fish is moved forward by a device that grips the head while the stop is swung out. The lowermost fish in the magazine, which holds a number of fish lying on their sides, is drawn off by a splined wheel that engages the lower side of the fish's head through a central slit in the bottom of the magazine.

Extractor: LB

the net and are hsf and are towed to a processing station.
and, in the net, are immersed in the processing station.

(1671 August) 98 '8, No. 3, 3R126, 504 (March 1971)
Food Science and Technology Abstracts 3, No. 3, 3R126, 504 (March 1971)
U.S.S.R. Patent 271,752 (1970) (In Russian)
(pat.) (pat.)
Mitchell, W. R. Grace & Co. (pat.)

2.3 SETTING A LINE FOR CUTTING FISH DURING THEIR PREPARATION

Druseile, A. K. (Vsesouznyy Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khozyaystva i Okeanografii, U.S.S.R.) (pat.)
U.S.S.R. Patent 271,752 (1970) (In Russian)
Food Science and Technology Abstracts 3, No. 3, 3R126, 504 (March 1971)

The device consists of three rollers mounted on a horizontal spindle. The center roller, which is smaller in diameter than the two side ones, is mounted on a spring-loaded hub; thus it can move vertically relative to the side rollers during its interaction with the tails of the fish. A lever on the hub connects this segment of the device to the working tool.

Extractor: LB

the bivalves are passed through a heated cell where they are exposed to heated gases at high velocity. Then the shells are crushed and separated from the meat.

Food Technology 25, No. 7, 78 (July 1971)

2.3 BIVALVE PROCESSING

(1.85) 512

3.15
(0.5)

EFFECT OF IRRADIATION TEMPERATURE IN THE RANGE -196 TO 95C
ON THE RESISTANCE OF SPORES OF CLOSTRIDIUM BOTULINUM 33A
IN COOKED BEEF

Grecz, N. (Biophysics Laboratory, Biology Department, Illinois Institute of Technology, Chicago, Ill.), A. A. Walker (American Hospital Supply Corps, Evans-ton, Ill.), Abe Anellis, and D. Derkowitz
Canadian Journal of Microbiology 17, No. 2, 135-142 (February 1971)

Cans of ground cooked beef were inoculated with 10⁶ or 10⁸ spores (per can) of Clostridium botulinum 33A and then were irradiated with Co⁶⁰ γ rays at various temperature levels ranging from -196° to 95° C. Cans of ground beef containing 10⁸ spores per gram required a higher irradiation dose for sterilization than did the cans having 10⁶ spores per can. Also, the resistance of the spores decreased progressively with increasing temperature at which the cans were irradiated. [4] figures, 6 tables, 28 references]

FTP

Bottled fish is treated with a solution of pyroligneous acid or is smoked. Then, the smoke-treated fish is inoculated with Aspergillus oryzae and incubated to produce an inosinate-containing seasoning.

Food Technology 25, No. 7, 81 (July 1971)

3.12 INOSINATE SEASONINGS

(3.4)(0.5)
Ogura, S., K. Yamazaki, and K. Miyama (pat.)
Japanese Patent 4150/71

AN ACCELERATED SYSTEM FOR SCREENING OF PROCESS VARIABLES
AND FRESHNESS INDICES OF IRRADIATED FISHERY PRODUCTS

Alur, M. D., V. N. Madhavan, N. F. Lewis, and U. S. Kumta (Biochemistry & Food Technology Division, Bhabha Atomic Research Centre, Trombay, Bombay-85, India)
Journal of Food Technology 6, No. 1, 73-83 (March 1971)

Homogenized samples of fish fillets and shrimp were stored at 30° C. in order to provide a rapid screening test for process variables. Such storage of processed samples enhanced microbial growth and levels of trimethyl amine and total volatile base values (freshness indicators). The researchers found that this test method was successful when applied to shrimp and four species of fish (Indian salmon, surmai, pomfret, and Bombay duck) that were untreated or were subjected to gamma irradiation treatment, with or without added sodium nitrite and benzoic acid. [4] figures, 2 tables, 15 references]

FTP

Coarse fish pieces are cooked with steam then drained. The cooked material is ground, pasteurized, cooled, and homogenized, and the resulting material is frozen.

Food Technology 25, No. 8, 86 (August 1971)

3.2 PASTEURIZED FISH-BLOCK

Heath, J. R. (pat.)
Canadian Patent 867,691

3.25
(9.3)

FROZEN FOOD TRANSPORT -- AND THE LAW

Tinghitella, Stephen
Quick Frozen Foods 33, No. 12, 94 (July 1971)

In this guest editorial by the publisher of "Traffic Management," the author briefly notes some of the basic information that managers involved in the frozen food business might find helpful during the distribution of their products. The information covers frozen food products that are exempt from transport regulation (a complete list of these foods, specified in Administrative Ruling 107 I.C. Act, may be obtained from the editor of "Quick Frozen Foods," 205 E. 42nd St., New York N.Y. 10017), cargo insurance on shipments by interstate truckers, the rules for rates and tariffs, freight charges and claims (covered in Section 223 of the I.C. Act), liability of shippers and carriers (Section 222(c) of the I.C. Act), and the scope of a carrier's responsibility to the shipper (Section 216 of the I.C. Act). Those firms too small to hire traffic managers may find the following reference books valuable:

"Distribution and Transportation Handbook," by Harry J. Bruce (Jos. Schlitz Brewing Co.); published by Cahners Book Division, 221 Columbus Ave., Boston, Mass. 02116; \$25. This book covers every definition and glossary term known to traffic professionals, says the author, and includes summaries of the statutes regulating all modes of transport.

"Perishable Claims--The Problem and the Cure," by Winton Teagle (Refrigerated Transport Co., Inc.); published by the Common Carrier Conference-Irregular Route, (over)

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 13

3.30
(2.01)

OBSERVATIONS ON THE SPORICIDAL ACTION OF VEGETABLE OILS
USED IN FISH CANNING

Dallyn, H., and J. R. Everton (Research & Development Department, Metal Box Co. Ltd., Kendal Ave., London, W.3, England)
Journal of Applied Bacteriology 33, No. 4, 603-608 (December 1970)

Some vegetable oils contain a water-soluble sporidial or sporistatic agent whose action is noticeable at 80° C. and very marked at 100° C. The amount of the substance present in these oils varies; apparently it is a product of autoxidation. To investigate this factor as it might affect the stability and safety of tuna canned in olive or groundnut oil, the authors heated spores of the putrefactive anaerobe PA3679, Clostridium sporogenes, in these oils. Although the heat resistance of the spores was significantly reduced, identification of the factor responsible for the effect was unsuccessful. The authors suggest that a peroxide precursor of a carbonyl may be involved.

That a sporidial/sporistatic factor is present in olive and groundnut oil is demonstrable. This factor may account for the microbiological stability of sublethally processed tuna canned in vegetable oil. Although the mechanism of this stability is not completely understood, any departure from long-established preprocessing treatments could have serious consequences. [1 figure, 3 tables, 13 references]

LB

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 13

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 13

3.6 A SINGLE LAYER MOISTURE ABSORPTION THEORY AS A BASIS FOR THE STABILITY AND AVAILABILITY OF MOISTURE IN DEHYDRATED FOODS

Caurie, M. (Food Research Institute, P.O. Box M.20, Accra, Ghana) Journal of Food Technology 6, No. 2, 193-201 (June 1971)

Moisture absorption in dehydrated foods cannot form a layer more than a single molecule deep and the stability of the food depends upon this single layer. Current use of an Aw (moisture availability) scale as an index of available moisture in dehydrated foods is limited and overestimates the parameter. The author suggests new definitions expressed directly as percent moisture and as a ratio of the total moisture/bond energy or gaseous water content. The laboratory method of dehydrating materials at constant temperature by lowering the ambient humidity may impair the subsequent absorption capacity of the material if the humidity is lowered below a certain critical minimum value.

[3 figures, 27 references]

dlj
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are keldj ueht :suotissodmooc guinosaes qijm pejaerj are tsew pinbs fo seceid
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Ugen-Kashih Hhnode Skokuhin Kakoshon
Japenedeent 2383/71

6.193 A COMPARISON OF RATIONS FED TO LAYING BIRDS IN CAGES

Biel, Jacob (Department of Poultry Science, The University of British Columbia, Vancouver 8, B.C., Canada), and C. W. Wood (British Columbia Department of Agriculture, Abbotsford, B.C., Canada) Poultry Science 50, No. 3, 969-972 (May 1971)

This research note reports results of feeding three rations, two controls and an "all plant" ration, to pullets kept in laying cages. The composition of the laying rations is shown in the table.

Ingredient	Control ration	"All-plant" ration	Control ration enriched
Wheat, ground, coarse	36.725	35.2	37.775
Corn, ground	36.0	36.0	34.55
Yellow corn (stabilized)	2.00	2.75	2.3
Soybean meal (50% protein)	9.0	15.5	1.0
Soybean oil	3.0		9.88
Herring meal (70% protein)	2.0		2.0
Whey, dried	1.0		2.0
Cereal grass (20% protein)	6.0	2.0	6.25
Limestone, ground	0.5	1.5	1.5
Dicalcium phosphate	0.25	0.25	0.25
Salt, iodized			2.0
Corn distillers solubles			1.76 mg./kg.
Brewers yeast			11.0 mg./kg.
Tricalcium phosphate			6.6 mg./kg.
Poliocten acid			1.1 mg./kg.
Vitamin B			11.0 I.U./kg.
DL-methionine	0.025	0.05	0.025
Micronutrients	0.5	0.5	0.5
Total	100.0	100.0	100.0

Micronutrients added: Vitamin A, vitamin D₃, vitamin B₁₂, choline chloride, manganese sulfate, zinc oxide, copper sulfate, riboflavin, menadione sodium bisulfite, santonin, diluent.

6.54 THE FISH PROTEIN CONCENTRATE STORY 13. AQUEOUS PHOSPHATE PROCESSING

Spinelli, J., J. Dyer, L. Lehman, and D. Wieg (NOAA, National Marine Fisheries Service, Technology Laboratory, Seattle, Wash. 98102) Food Technology 25, No. 7, 53-57 (July 1971)

Installments 1 through 12 on the general subject appeared in earlier issues of Food Technology. The present part 13 describes the use of aqueous phosphate in the isopropyl alcohol extraction method for the manufacture of fish protein concentrate (FPC). In this modified process, an equal amount of water is added to the ground fish and the mixture is acidified with H₂SO₄ to reach a pH of 5.7. The mixture is then heated to 70°-80° C. to inactivate the proteolytic enzymes. Then, sodium hexametaphosphate (in a 5% aqueous solution) is added to the fish-water mixture to a concentration of 1% based on the weight of the wet fish. The slurry is centrifuged, yielding a solids fraction and a water-oil phase. The solids are resuspended in an equal amount of water and the slurry is again centrifuged; this process is repeated once. The residual lipids are removed from the remaining solids by extraction with azeotropic isopropyl alcohol. A flow-sheet diagram follows. The authors state that the aqueous phosphate modification minimizes the problem involved in the regular isopropyl extraction process whereby organic volatile materials (amines and carbonyl compounds) extracted by the isopropyl alcohol can co-distill with the alcohol-water azeotrope.

(over)

7.86 AN IMMUNOFLUORESCENT TECHNIQUE FOR DETECTING AEROMONAS LIQUEFACIENS IN FISH UTILIZED IN LUNAR EXPOSURE STUDIES

Lewis, D. H. (Department of Veterinary Microbiology, College of Veterinary Medicine, Texas A&M University, College Station, Tex. 77801), and Terry C. Allison (Brown Root Northrup, National Aeronautics and Space Administration--Manned Spacecraft Center, Houston, Tex. 77058) Transactions of the American Fisheries Society 100, No. 3, 575-578 (July 1971)

The described investigation had as its objective the development of a method for detecting *A. liquefaciens* in preparations that must be sterilized before removal from quarantine facilities. The fluorescent antibody (FA) technique was considered a feasible approach to this problem, since living organisms are not required for the immunofluorescent reaction.

The protocol for preparing Salmonella "0" antiserum yielded *A. liquefaciens* antisera which were adequate for this investigation. Polyvalent *A. liquefaciens* antiserum was prepared by mixing equal parts of AM-1, AM-3, AM-4, AM-5, and AM-17 antisera. The polyvalent antiserum yielded a conjugate capable of staining specifically and intensely all *A. liquefaciens* isolates tested.

The results indicated the FA testing for *A. liquefaciens* may be performed on preparations that have been autoclaved or that have been immersed 24 hours in the certified fixatives. Although the investigation was designed to fulfill a specific need, i.e. testing fish under conditions of strict quarantine, the described technique could possibly be applied to screening fish cultured for commercial purposes. [1 figure, 2 tables, 5 references]

Reprinted in part

[4 tables, 4 references]

FIP

Feedstuffs 43, No. 31, 12-11, 33 (July 31, 1911)

6.197

6.54

Toku Chibu (pat.)
Japanese Patent 6827/71
Food Technology 25, No.

414

300

[3 figures, 4 tables, 13 references]

rkshire, England)

gent. This study was car-
recting this organism in

is described that consists incubate. (2) subculture colonies to Nagler medium, media contained polymyxin.

on one of three occasions
the method was more sensitive

JIF

The report has 12 tables and 5 references.

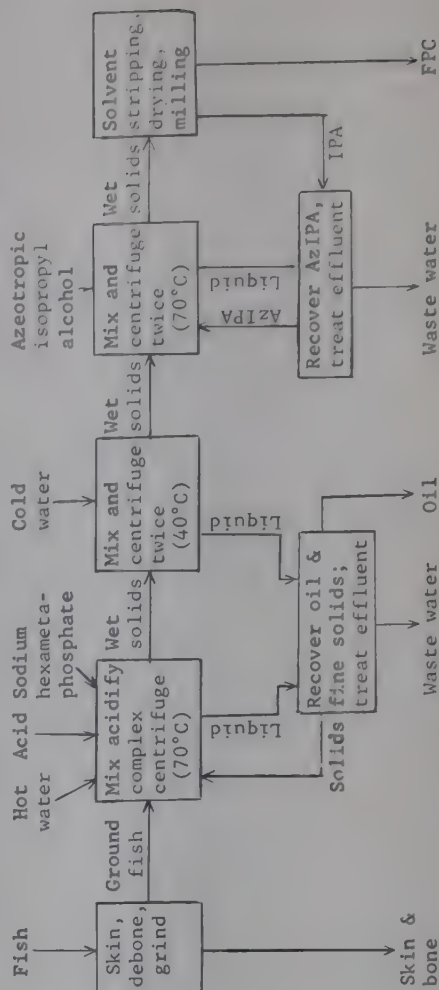
Aquiculture 1, No. 3, 35-46 (June 1971) (In Chinese)

Hwang, S. J. (Marine Sciences Research Laboratory, Memorial University of Newfoundland)

GENERAL CONSIDERATIONS OF ELECTROPHORESIS

(0.114)

Flow diagram for the preparation of fish protein concentrate



FTP

8,59
(1.89) SIALOGLYCOLIPIDS OF THE STARFISH DISTOLASTERIAS NIPPON.
ISOLATION AND CHARACTERISTICS OF THE MONOMERIC SUBSTANCE
AND SIALIC ACIDS

Zhukova, I. G., T. A. Bogdanovskaya, G. P. Smirnova, and N. K. Kochetkov (N. D. Zelinskii Institute of Organic Chemistry, Moscow, U.S.S.R.)
 Biochemistry **35**, No. 4, Part 2, 680-684 (July-August 1970) [Biokhimiya **35**, No. 4, 775-780 (July-August 1970)]

The sialoglycolipids isolated from the digestive gland of the starfish were found to contain phytosphingosine, glucose, galactose, and sialic acids in a molar ratio of 1:2:2:6. The sialic acids were of two types: one has the structure of N-acetylneuraminic acid; the other, a new type, is also a derivative of neuraminic acid, but it has no O-acyl groups and, possibly due either to the presence of alkali-stable substituents at the eighth and ninth hydroxyl groups or to the nature of the acyl substituent at the amino group, its chromatographic mobility is greater than that of N-acetylneuraminic acid.

8.59 TWO FORMS OF DIPEPTIDASE IN COD MUSCLE
(1.51)
Nauss, Kathleen M. (Univ. Hohenheim, Hohenheim, Germany)
Chemical Abstracts 75, No. 5, 30391u (August 2, 1971)

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 17

9.10 MARINE FOOD CHAINS
(9.6)

Steele, John H. (editor)
Published by The University of California Press, Berkeley and Los Angeles, Calif.
(1970): viii + 552 pp. \$13.50.
Thomas E. Wissing (Department of Zoology, Miami University, Oxford, Ohio 45056)
(reviewer)
Transactions of the American Fisheries Society 100, No. 3, 595 (July 1971)

"This volume is from a symposium held on 23-26 July, 1968, at the University of Aarhus in Denmark under the auspices of the International Council for the Exploration of the Sea (ICES). It contains brief introductory papers, a summary, and 28 major contributions organized under the following headings: recycling of organic matter, pelagic food chains, feeding mechanisms, food requirements for fish production, food abundance and availability in relation to production, and theoretical problems.

Five papers deal with the role of dissolved and particulate organic material in marine environments. Mechanisms of inclusion of dissolved macromolecular organic compounds into food chains are explored by Kharilov and Finenko. Dissolved organic material in sand ecosystems appears to enter the food chain through uptake by heterotrophic bacteria which in turn provide an energy source for interstitial animal populations (McIntyre, Munro, and Steele). Studies carried out in the open ocean (Finenko and Zaika) and shallow coastal regions (Qasim, Marshall) suggest that particulate organic matter (detritus) is an important food resource for many organisms inhabiting these areas....

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 17

9.10 BIOLOGY AND WATER POLLUTION CONTROL
(9.6)

Warren, Charles E.
Published by W. B. Saunders Company, Philadelphia, London, Toronto (1971); xvi +
434 pp. \$11.
Donald I. Mount (U.S. Environmental Protection Agency, National Water Quality Lab-
oratory, 6201 Congdon Boulevard, Duluth, Minn. 55804) (reviewer)
Transactions of the American Fisheries Society 100, No. 3, 592 (July 1971)

This book is of value not only to biology professors and students but to engineers, social scientists, economists, industrial managers, public administrators, politicians, and the environmentally concerned public. Its length--and because the print is small, the pages are large, the figures and tables few, and the pictures nonexistent, its 434-page size is misleading--derives more from its breadth than its depth. Each chapter is a bare introduction to some aspect of the environmental changes we call pollution and to the biology that is relevant to those changes.

The book has seven parts: Introduction, Conditions of Life in the Aquatic Environment, Morphology and Physiology, Ecology of the Individual Organisms, Population Ecology, Community Ecology, and Conclusion. The reviewer calls special attention of biologists in pollution-control agencies to the Introduction to Part 1, and to the chapters titled Tolerance of Lethal Conditions, Application of Toxicity Bioassay Results, and Biological Waste Treatment. These chapters contain valuable summaries of principles widely scattered in the literature. He also considers the Introduction and Chapter 20 especially important for biologists who are planning (over)

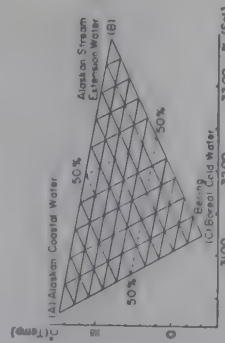
COMMERCIAL FISHERIES ABSTRACTS VOL. 24 NO 11 PAGE 17

9.11
(1.0112)

2. ANALYTICAL STUDIES ON THE EFFECT OF THE WIND ON THE SPREADING OF WATER MASSES IN THE EASTERN BERING

Kihara, Kohei (Tokyo University of Fisheries, Konan-4, Minato-ku, Tokyo 108, Japan)
La Mer 9, No. 1, 12-22 (February 1971)

Since the population dynamics of a given species is affected by the interaction between the individuals of the species and their environment, the author has been examining the integrality of marine organisms and their environments in order to determine the abundance of various species in a given fishing area. The fishing areas in this part of the study is the Eastern Bering Sea. In summer, the water masses there are of three types: Alaskan Coastal Water, Bering Boreal Cold Water, and Alaskan Stream Extension Water (see temperature-salinity diagram of bottom-layer water on the right). Although all these water masses affect the formation of demersal fishing grounds, the last is the particular subject of this study. It seems to be the optimum environment for Alaskan pollock (*Theragra chalcogramma*) but an unsuitable one for yellow sole (*Limanda aspera*), rock sole (*Lepidopsetta bilineata*), and the flatfish *Pleuronectes pallasi*.



The Alaskan Stream flows westward along the south coast of the Aleutian Islands, entering the Bering Sea through the straits between the islands.

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 17

Johnson, A. E. (J. Bibby Food Products Ltd., 57 Great Howard Street, Liverpool, England), H. E. Nursten, and A. A. Williams
Chemistry and Industry No. 21, 556-565 (May 22, 1971)

This is a survey of the published information on vegetable aromas. The authors state that the survey is not exhaustive but that it does cover the majority of the work on the common vegetables. This Part I reports on asparagus, onion, rakkyo, leek, garlic, chive, groundnut, pea, kidney bean (also called french or haricot bean), broad bean, lima bean, cabbage, cauliflower, and rutabaga. [8 tables, 114 references]



esters, and diacylglyceryl ethers of the sea anemone from Passamaquoddy Bay. The structurally related trans-6-hexadecenol is present in the wax esters of the species.

[2 tables, 24 references]

FTP

Hooper, S. N., and R. G. Ackman (Fisheries Research Board of Canada, Halifax Laboratory, Halifax, Nova Scotia)
Lipids 6, No. 5, 341-346 (May 1971)

8.59 TRANS-6-HEXADECENOIC ACID AND THE CORRESPONDING ALCOHOL IN LIPIDS OF THE SEA ANEMONE METRIDIDIUM DIANTHUS

"The last section in the book contains five theoretical papers (McAllister, Greze, Brocksen et al., Palohelmo and Dickie, Dunbar) which relate in part to the main question posed by the symposium--"what extra information do we have and do we need linking primary production and commercial yield?" Emphasis is given to generalizations which might explain present trends in production or perhaps allow prediction of future yields to marine fisheries..." Reprinted in part

"The last section in the book contains five theoretical papers (McAllister,

"Food requirements for fish production are explored in a series of organisms. Laboratory and field studies of the bivalve, *Macra stultorum*, show that this species is shared as an energy source by predators such as the plaice, asteroids, and the drilling snail, *Natica* sp. (Birkett). The siphons of another bivalve, *Tellina tenuis*, are consumed by young plaice and then later regenerated (Trevallion et al.). Lasker presents an interesting analysis of the caloric requirements of the Pacific sardine, *Sardinops caerulea*. Statistics from present world fisheries suggest that fish populations do not overexploit their food supply. However, increases in the generally accepted ecological efficiency of 10% at several levels in the food chain may increase potential fish production (Culland).

"New information on feeding mechanisms, food habits, digestion and assimilation is summarized in four papers. Rates of filtration and ingestion at different temperatures and algal cell concentrations are determined for the bivalves, Arctica islandica and Modiolus modiolus (Winter). Analysis of the digestive tract of the mullet, Mugil cephalus, reveals that this species "telescopes the food chain" by consuming plant detritus and micro-algae (W. E. Odum). The relationship between food concentration and the stomach contents of baleen whales is examined by Nemoto. Zateseptin utilizes ecological groups to correlate feeding patterns in the bottom communities of the North Sea with various environmental factors.

<p>9.11 (9.6)</p> <p>OCEANOGRAPHY -- AN INTRODUCTION TO THE MARINE ENVIRONMENT</p> <p>Weyl, Peter K. Published by John Wiley & Sons, Inc., New York (1970); xvi + 535 pp. \$12.50 Malvern Gilmartin (Hopkins Marine Station, Pacific Grove, Calif. 93950) (reviewer) Transactions of the American Fisheries Society <u>100</u>, No. 3, 596-597 (July 1971)</p> <p>This book emphasizes the mechanisms by which the ocean has stabilized the surface environment of the earth and subserved the evolution and maintenance of complex forms of life. Its objective is to point out the interrelationships of the physical, geological, and chemical processes abounding in the marine environment. Each of its six main sections contains from four to seven short chapters. These sections are "Perspectives" (a historical background to oceanography, with an introduction to time and space scales), "The Earth as a Heat Engine" (the characteristics of water and the motion of fluids relative to air-sea interaction, climate, and atmospheric and oceanic circulation), "The Earth Beneath the Sea" (the dynamic processes that create and modify the topography of the ocean floor and the continental margins), "The Salt of the Sea" (the chemical properties of sea water, including a detailed discussion of the carbonate cycle), "Life in the Sea" (the basis, evolution and productivity of selected plant and animal life and the interaction of these forms with the environment), and "The Marine Environment" (coral reefs, estuaries and mediterranean seas, the deep circulation of the ocean, and the ocean's effect on climatic change; the methods by which combined geological, physical, chemical, and biological factors create and maintain a given environment). LB</p> <p>COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 19</p>	<p>9.13</p> <p>EFFECT OF TEMPERATURE AND ACCLIMATION UPON FFA LEVELS IN THREE SPECIES OF RODENTS</p> <p>Ferguson, J. Homer, and G. Edgar Folk, Jr. (Department of Physiology and Biophysics, University of Iowa, Iowa City, Iowa) Canadian Journal of Zoology <u>49</u>, No. 3, 303-305 (March 1971)</p> <p>Because lipid is the principal fuel source during cold stress, it probably has a role in the process of acclimation and in the responses of mammals to cold exposure. Earlier workers have demonstrated the ability of the red squirrel (a cold-resistant mammal) to release high quantities of FFA (free fatty acid) into the blood plasma. In the present study, the authors examined the effect of temperature acclimation upon FFA levels and the ability of warm- and cold-acclimated mammals to elevate those levels during cold stress. The animals tested were white rats, mice, and red squirrels. Warm acclimation of the animals was carried out at 22°-24° C.; cold acclimation was carried out at 2°-4° C., and one group of cold-acclimated animals was exposed individually to -35° C. for 30 min.</p> <p>The FFA levels in the red squirrel (the genetically cold-adapted species) was highest and reflected the animal's ability to maintain high metabolic rates. The FFA concentrations in the red squirrels were elevated after cold acclimation. Cold acclimation of white rats and mice had no effect on their FFA levels. The short-time cold exposure (-35° C. for 30 min.) of each of the three species caused the FFA levels to rise (in each species).</p> <p>[1 table, 8 references]</p> <p>FTP</p> <p>COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 19</p>
<p>9.12</p> <p>CORAL-EATING SEA STARS ACANTHASTER PLANCHI IN HAWAII</p> <p>Branham, J. M., S. A. Reed, Julie H. Bailey (Department of Zoology, University of Hawaii, Honolulu, Hawaii 96822), and J. Caperton (Department of Oceanography, University of Hawaii) Science <u>172</u>, No. 3988, 1155-1157 (June 11, 1971)</p> <p>An aggregation of 2×10^4 <i>Acanthaster planci</i> off the south coast of the island of Molokai, Hawaii, was observed from September 1969 to November 1970. In April 1970 an attempt was made by the local fish and game agency to eradicate the aggregation and the authors made some pertinent observations during several months before and just after the attempted eradication.</p> <p>The authors found, among other things, that the coral in the area was predominantly alive, and that the proportion of dead coral did not increase appreciably during their period of observation. They suggest that coral growth can, in some places, support dense aggregations of <i>A. planci</i>. In other places, as on the Great Barrier Reef where grazing exceeded coral growth and a large proportion of the coral was killed, an imbalance could have resulted from (1) increased grazing pressure, (2) decreased coral growth, or (3) a combination of both (1) and (2).</p> <p>[1 figure, 1 table, 12 references]</p> <p>FTP</p> <p>COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 19</p>	<p>9.15 (9.6)(2.9)</p> <p>PRINCIPLES OF PLANT AND ANIMAL PEST CONTROL, VOLUME 5. VERTEBRATE PESTS: PROBLEMS AND CONTROL</p> <p>Subcommittee on Vertebrate Pests, National Academy of Sciences (Robert A. McCabe, University of Wisconsin, chairman) Published by National Academy of Sciences, Washington, D.C. (1970); 153 pp. \$5.25. Joseph B. Hunn (Bureau of Sport Fisheries and Wildlife, Fish Control Laboratory, Lacrosse, Wis. 54601) (reviewer) Transactions of the American Fisheries Society <u>100</u>, No. 3, 597 (July 1971)</p> <p>Pests, as used in this volume, are animals whose activities conflict with the interests or the welfare of man. Because the control of pests has not always been based on sound biological practices, because proper educational training has not always been available to pest-control practitioners, and because value judgments in pest situations so often differ, control agencies often disagree bitterly with conservationists. Although control of fish pests has not generated the intense controversy that control of birds and large mammals has, it has not been totally without criticism (see Copeila, No. 1 (March and No. 2 (June), 1953). Chapter 2 of this eight-chapter volume, "Fishes in Pest Situations," by Robert E. Lannon, is a 35-page general review of all phases of the pest-fish problem and man's attempts to solve it.</p> <p>The first group of fishes examined are those affecting man's safety--biting fish, electric fish, venomous and poisonous fish, and fish that act as vectors of disease. The next group are those that affect man's welfare by causing economic loss or esthetic depreciation--fish that destroy commercial fishing gear, interrupt commercial or sport fishing, damage fishery or waterfowl habitats, compete</p> <p>(over)</p> <p>COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 19</p>

Bone, Quentin (The Plymouth Laboratory)

Journal of the Marine Biological Association of the United Kingdom 51, No. 1, 219-225 (February 1971)

The behavior, histology, and anatomy of the black scabbard fish, an elongate teleost, are described. Among the fish's structural peculiarities is its swim bladder. This sac occupies one-third the fish's total length and contains over 80% of oxygen (as do other deep-sea fishes). However, lipids stored in the thick walls of the swim bladder, around the vertebral column, and in the dermis and the skull bones provide an appreciable reserve of static lift. The specific gravity of this lipid is 0.9206 at 20° C., considerably higher than that of the lipid stored by neutrally buoyant fish without swim bladders, those that use lipid as the sole source of static lift.

[3 figures, 2 tables, 15 references]

LB

FTP

[3 figures, 1 table, 16 references]

The blood serums of Antarctic fishes freeze at -2° C.--approximately 1° C. below the melting point of the blood serum. This thermal hysteresis is due to influence of glycoproteins, apparently resulting from the adsorption of the glycoprotein molecule onto the surface of ice crystals.

Devries, Arthur L. (Physiological Research Laboratory, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, Calif. 92037)

Science 172, No. 3988, 1152-1155 (June 11, 1971)

9.13 GLYCOPROTEINS AS BIOLOGICAL ANTIFREEZE AGENTS IN ANTARCTIC FISHES

LETJSMU YATJELTACROSCOPY OF SKELETAL TROUT, TURKEY AND BEEF FROM RAINBOW MARLIN GINNINGS

21.6

Schaller, D. D. R., and W. D. Powrie (Department of Food Science, University of British Columbia, Vancouver 8, British Columbia, Canada)

Journal of Food Science 36, No. 4, 455-459 (May-June 1971)

A technique is described for shattering frozen, intact muscle so that topographical details of fibers and fibrils in prerigor and postrigor muscles can be assessed by scanning electron microscopy. The technique was used to study the ultrastructure of skeletal muscle from rainbow trout, turkey, and beef immediately after death (prerigor) and at various times postrigor.

Prerigor muscle samples showed intact fibrils with ele- vated transverse elements equidistant from each other. Also the surface of each sarcomere had a crisscross pattern of thin strands that were about the same size as the transverse elements. Between transverse elements, thin longitudinal strands and transverse central elevated bands were found on the surface of fibrils. When the trout muscle was stored at 3° C. for 6 days, the transverse elements decreased and became perforated.

[see references 62, 63, 64]

FTP

This report on shrimp has 11 figures, 1 table, and 1 reference.

LB

Chao, N. H. (translator)
Aquaculture 1, No. 3, 47-52 (June 1971) (In Chinese)

9.12 THE GENERAL BIOLOGY AND DEVELOPMENT OF MACROBRACHIDUM ROSENBERGII (DE MAN)

(1.85)

DEPENDENCE OF THE ENZYMIC ACTIVITIES IN THE TRUNK MUSCLE OF GOLDEN ORFES (IDUS IDUS) ON THE ADAPTATION TEMPERATURE

9.13 (2.03)

Lehmann, Johannes (Zool. Inst., Univ. Kiel, Kiel, Germany)
Chemical Abstracts 74, No. 7, 29324x (February 15, 1971)

FTP

LIVER TRIGLYCERIDE SYNTHESIS FAILURE IN POST-SPAWNING SALMON

6.13

Phleger, C. F. (Scripps Institution of Oceanography, P.O. Box 109, La Jolla, Calif. 92037)

Lipids 6, No. 5, 347-349 (May 1971)

The liver of the pink salmon loses the ability to synthesize triglycerides after the fish migrates into fresh water and spawns. The triglycerides are used as a food reserve in the spawning fish. Probably, cholesterol is used to mobilize the fatty acids of triglycerides in the form of cholesterol esters. In the spawned out fish, the total lipid decreases, the cholesterol remains constant, and the relative values of protein and water increase. Hepatic lipogenesis and synthesis of cholesterol decrease.

[2 tables, 19 references]

9.15 (9.6)(2.9)

with or prey on more valued fish or shellfish, and transmit fish diseases. (Introduction of nonnative fishes such as carp has caused major problems for fishery and wildlife-refuge managers. "Hopefully future introductions will be better researched and controlled to prevent widespread destruction of quality aquatic habitat," says the reviewer.)

The solution to fish-pest problems has been approached with varying degrees of success from the biological, the physical, the chemical, and the legal angle. In many instances, biological control measures have been disappointingly ineffective, though development of infertile hybrids and unisexual stocks has helped control overpopulation of some species and increase the yield from cultivated and recreational ponds. Electromechanical weirs have been successfully used not only for control but for assessment of various anadromous species. Chemical control is the most widely practiced and the most effective technique available to fishery managers. Although legal controls have been rarely used, legislation that is most effective, and most needed, is that which regulates the importing and stocking of exotic fishes. Recent work has shown that the best solution to the problem can be arrived at through an integrated approach incorporating aspects of all four types of control.

The review ends with the following imperative: "With ever-increasing conflict over use of aquatic habitats, the fishery manager will be more and more called upon to make value judgments on so-called pest situations. This means that he will have to practice sound biology as well as sharpen his use of fishery tools. This added responsibility for the field biologist is shared by the researcher who must provide the best possible fishery tools and effective means of using them."

LB

9.16
(9.14)(9.15)

LESSONS FROM JAPAN IN FISH FARMING

Williamson, Gordon R.

Fishing News International 10, No. 5, 30-32, 35 (May 1971)

In this first of two articles, the author explains the basic principles of fish culture, reviews recent developments in Japan, and shows how these developments might be applied in other countries. From his study of Japanese operations, he evolved five basic principles for the culture of any species of fish: (1) pure, plentiful water; (2) a plentiful, reliable source of fry; (3) cheap, plentiful feed that is available the year round; (4) a means of preventing (or curing) disease, predation, and thievery; and (5) a good demand for the fish, coupled with a knowledge of the local market. Recognition of the validity of these principles made him realize how wrong the species-by-species approach to fish culture is. Almost any species can be cultured almost anywhere; whether the operation is commercially feasible, of course, is another matter. Training, advice, and textbooks all help in planning a farm, but common sense is important, too, for no training or book can cover all the peculiarities of a given site. His advice to future fish farmers is to build as little as possible--and that of light, easily demolished construction--so that mistakes can be removed and obsolete equipment can be replaced as painlessly as possible.

Using the five principles of aquaculture as a basis, the author examines the latest trends in Japanese fish farming.

Water. Japanese marine fish farms are located in sheltered places all along the coast. Most farms are in a cove with a net barrier fixed across the mouth; many have special inlet pipes with powerful pumps leading from the open sea so that

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 21

(over)

9.16

(9.6)(0.116)
(0.8)

FISH AND INVERTEBRATE CULTURE.

WATER MANAGEMENT IN CLOSED SYSTEMS

Spotte, Stephen H.

Published by John Wiley & Sons, Inc., New York (1970); xiv + 145 pp. \$8.95.
Peter J. Colby (Great Lakes Fishery Laboratory, Bureau of Sport Fisheries and Wildlife, Ann Arbor, Mich. 48107) (reviewer)
Transactions of the American Fisheries Society 100, No. 3, 598-599 (July 1971)

This book's foreword (written by James Atz) contains the following statement: "Now for the first time, people who want to raise aquatic animals as economically as possible, or need to keep them alive in captivity for any reason (in aquarium or pond, at home or in the laboratory), have a book that not only will tell them what to do but will explain the reasons for doing it." Despite the title, the book does not deal with aquaculture; it does not discuss the nutritional needs or the life history of aquatic organisms; nor does it describe the control and treatment of fish diseases, except in the chapter on disease prevention by environmental control. Rather, it is concerned with (1) the effects of animals on captive water and (2) the effects of captive water on animals. Thus the subtitle is more descriptive of the contents than the title is.

The first four chapters are addressed to the first concern, above. The first three describe the care and function of biological filters (their bacterial composition, a formula for determining their carrying capacity, the selection of bed size, various methods of oxygenating water and moving it through the filter bed), mechanical filters (biological beds as mechanical filters, the use of sand or diatomaceous earth in vacuum and pressure filters, steps for troubleshooting clogged

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 21

(over)

9.17

FISH AND WILDLIFE ENHANCEMENT THROUGH WATER RESOURCES DEVELOPMENT

Jurgens, Kenneth C., Sr. (Texas Parks and Wildlife Department, Austin, Tex. 78701)
Water Resources Bulletin 7, No. 2, 260-264 (April 1971)

Water resources development does not necessarily enhance fish and wildlife. Often construction of reservoirs or channeling of streams severely alters or even destroys stream fisheries and wildlife lands. Moreover, reduction in the volume of fresh waters reaching estuaries and adjacent marshes can do irreparable harm to the animal life living there. To offset such losses when a river system is to be totally harnessed, planners could set aside large natural areas dedicated to use by the wildlife of the system. This is replacement rather than enhancement. Reservoir fisheries can be enhanced by such devices as timber, shoreline, and boat-road clearing; variable-level drawoff resorts; and tailrace escapement channels. Thus, some species of fish and wildlife can be enhanced by water resources development, but only at the expense of others--and then only by careful and integrated planning.

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Chemical Abstracts 74, No. 11, 52434s (March 15, 1971)

Murphy, Philip G. (Hopkins Mar. Stn., Stanford Univ., Pacific Grove, Calif.)

(13'6)

9.16

EFFECTS OF SALINITY ON UPTAKE OF DDT, DDE AND DDD BY FISH

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 21

9.19

SOME ENZYMATIC PROPERTIES OF PLASMA ESTERASES FROM CHANNEL CATFISH (ICTALURUS PUNCTATUS)

Hogan, James W. (Fish-Pesticide Research Laboratory, Bureau of Sport Fisheries and Wildlife, U.S. Department of the Interior, Columbia, Mo. 65201)
Journal of the Fisheries Research Board of Canada 28, No. 4, 613-616 (April 1971)

Although organophosphorus compounds are less persistent than organochlorine pesticides, they are highly toxic, and even though they may be short-lived in aquatic ecosystems, they may have long-lasting biological effects. This article reports on a study to determine if enzymes are present in fish blood that could be used to assess some of the effects of organophosphorus pesticides in fish populations.

The water-soluble salts of choline esters used as substrates were: acetylcholine iodide (ACh), propionylcholine-p-toluenesulfonate (PrCh), butyrylcholine-p-toluenesulfonate (BuCh), acetyl- β -methylcholine bromide (MeCh), and benzoylcholine chloride (BzCh). Noncholine esters used as substrates were phenyl acetate (PhA), phenyl-n-butyrate (PhB), glyceryl triacetate (TA), glyceryl tri-n-butyrate (TB), and methyl-n-butyrate (MeB).

The compounds tested as esterase inhibitors were: eserine sulfate; 1,5-bis-(4-trimethylammonium phenyl)pentan-3-one diiodide (62C47); diisopropyl phosphorofluoridate (DFP); 2,2-dichlorovinyl dimethyl phosphate (dichlorvos); O,O-diethyl-O-p-nitrophenyl phosphorothioate (parathion); diethyl p-nitrophenyl phosphate (paraoxon), and diethyl mercaptosuccinate S-(O,O-dimethylphosphorodithioate) (malathion).

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COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 21

6.16 9.16 (0.0)(0.0)(0.8)

filter sleeves), and chemical filters (the effectiveness of activated carbon, ion-exchange resins, foam fractionation, and oxidation by ozone and ultraviolet irradiation for removal of dissolved organics; a citation of work in which between 92 and 99% of the nitrate and between 95 and 98% of the phosphate had been removed from the effluent of sewage-treatment plants with ion-exchange resins). The fourth chapter describes the interactions of free carbon dioxide, water, and mineral carbonates.

The last five chapters are addressed to the second concern, the effects of captive water on animals. In order, they contain the following: (chapter 5) a description of the factors affecting oxygen solubility and respiration rates of aquatic animals; (chapter 6) a definition of salinity, chlorinity, and specific gravity followed by a discussion of the function and uptake of elements, the toxic effects of heavy metals, and the procedure for preparing synthetic sea water; (chapter 7) a treatment of the origin of ammonia and its toxicity to aquatic life; (chapter 8) a description of disease prevention by environmental control and of a prefiltration arrangement for processing large volumes of natural water; (chapter 9) a step-by-step procedure for preparing reagents and for detecting ammonia, nitrite, nitrate, and dissolved oxygen.

Researchers, teachers, and students maintaining a modest collection of animals in the laboratory will find this handbook for managing water useful. It is a comprehensive review of the literature, and many of the investigators included (conducted) experiments without giving proper consideration to the well-being of their test organisms. For them this book should be a godsend.

Fry. Although most species cultured in Japan are raised from wild-caught fry or spat or from eggs stripped from wild-caught adults, dependence on such sources is risky because of increased pollution, yearly changes in the abundance of wild stocks, and the like. Moreover, the average fish farmer does not have the expertise or financial resources to raise his own fry. Hence the Japanese prefectural governments operate some 20 fry-breeding centers, selling the fry to the farmers at subsidized prices. The operation of these centers is briefly described.

Feed. Most marine fish are carnivores; thus Japanese fish farms are mostly located near fish harbors where the supply of cheap fish is good. However, with the development of artificial feeds (at present used extensively only for trout, ayu, carp, and eels), the farms can be more widely and advantageously located. The measures being taken to satisfy finicky appetites, to feed fish in such a way that on food remains uneaten, to ensure that all fish in an enclosure get an adequate amount of feed, and to develop feeds and feeding methods for larvae are discussed. One of the methods used to provide larvae with copepods for food is to hang net containers of larvae in the sea under electric lamps. The mesh size permits the copepods to enter but prevents the larvae from escaping. At night, the light attracts the copepods, and the larvae are fed.

Prevention of health hazards. Spills of toxic substances around the ponds are a constant hazard. The ponds are surrounded by a fence, and the key-note in the Japanese approach to prevention is the use of a "barrier" between the ponds and the surrounding area. The ponds are surrounded by a fence, and the key-note in the Japanese approach to prevention is the use of a "barrier" between the ponds and the surrounding area.

Marketing. The Japanese approach to marketing is the use of a "barrier" between the ponds and the surrounding area. The ponds are surrounded by a fence, and the key-note in the Japanese approach to prevention is the use of a "barrier" between the ponds and the surrounding area.

article 2, figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

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Also, certain divalent metal salts of calcium, cobalt, copper, magnesium, manganese, and nickel were tested for their effect on esterase activity. Enzymes in the plasma of the catfish hydrolyzed the substrates acetylcholine, phenyl acetate, and glycyl triacetate at rates of 28.1, 96.7, and 9.8 μ moles of substrate hydrolyzed per milliliter of plasma per hour, respectively. The authors attributed the esterolytic activity, in part, to an acetylcholinesterase-like enzyme. They suggest that the procedure employed could be used to assess *in vivo* esterase inhibition caused by organophosphorus pesticides.

[3 figures, 2 tables, 10 references]

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The report "Chlorinated Hydrocarbons in the Marine Environment" [National Academy of Sciences-National Research Council, 42 pp. (1971)] recommends that a massive effort should be made immediately to reduce drastically the escape of chlorinated hydrocarbons into the environment. The report states that as much as 25% of all DDT compounds produced to date may have been transferred to the sea. The report further recommends that the laws relating to registration of chemical substances and to the release of production figures by Federal Agencies be reexamined and revised in light of existing evidence of environmental deterioration.

Chemical & Engineering News 49, No. 25, 20-21 (June 21, 1971)

Anonymous

9.19 DDT IN THE OCEANS

PERSISTENCE OF PESTICIDES IN RIVER WATER

61.6

Eichelberger, James W. and James J. Lichtenberg (Environmental Protection Agency, Water Quality Office, Analytical Quality Control Laboratory, Cincinnati, Ohio 45202)

Environmental Science & Technology 5, No. 6, 545-549 (June 1971)

The persistence of 28 common pesticides was determined in raw river water over an 8-week test period. The pesticides were added to the water at the level of 100 μ g per liter. The percentage of the original amounts of the compounds remaining in the river water after 8 weeks were:

Organochlorine compounds--BHC, 100; Heptachlor, 100; DDE, 100; DDT, 100; Aldrin, 100; Dieldrin, 100; Telodrin, 100; Endosulfan, 100; Heptachlor epoxide, 100; Dieldrin, 100; Endrin, 100.

Organophosphorus compounds--Parathion, 0; Methyl parathion, 0; Malathion, 0; Ethion, 50; Trithion, 0; Fenitrothion, 0; Dimethoate, 50; Merphos, 0; Merphos recovered as Def, 5; Azodrin, 100.

Carbamate compounds--Sevin, 0; Zectran, 0; Mactacil, 0; Mesuron, 0; Baygon, 5; Monuron, 0; Fenuron, 0.

The authors also identified, where possible, the degradation or chemical conversion products of the pesticides.

[2 tables, 11 references]

ATL

Chemical Abstracts 74, No. 21, 110823f (May 24, 1971)

Bucler, Philip Alan (Bur. Commer. Fish., U.S. Fish Wildlife Serv., Gulf Breeze, Fla.)

INFLUENCE OF PESTICIDES ON MARINE ECOSYSTEMS

9.19

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(9.6)

EFFECTS OF ABATEMENT OF DOMESTIC SEWAGE POLLUTION ON THE BENTHOS, VOLUMES OF ZOOPLANKTON, AND THE FOULING ORGANISMS OF BISCAYNE BAY, FLORIDA

McNulty, J. Kneeland
Published by University of Miami Press, Miami, Fla. (1970); 107 pp. \$6.95.
Michael Waldichuk (Fisheries Research Board of Canada, Pacific Environment Institute, West Vancouver, British Columbia, Canada) (reviewer)
Transactions of the American Fisheries Society 100, No. 3, 597-598 (July 1971)

In 1956, installation of a municipal sewage-treatment plant ended the discharge of raw domestic sewage into the northern end of Biscayne Bay. After the plant had been in operation for 4 years, ecological studies of the bay were made, from the latter part of 1960 to the middle of 1961, to assess the restorative effects of pollution abatement. This monograph, based on a PhD thesis, compares the findings from these studies with the findings of similar studies made between 1953 and 1956, when the discharge of Miami's raw sewage was at its height. The quantitative study of benthic saprobes is supplemented with observations of sediments, phosphate-phosphorous in the water, zooplankton, amphipod tubes, barnacles, and other fouling organisms. Following a straight-forward presentation of the two sets of data, the author offers a rational interpretation of the effects of pollution abatement on various sectors of the bay. Tables of species examined during the comparison, an extensive bibliography, and the style of reporting make the work highly readable for the nonspecialist as well as useful as a reference for the specialized marine biologist working with either pollution or invertebrates.

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COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 23

9.3
(9.4)

THE LAW OF THE SEA: THE UNITED NATIONS AND OCEAN MANAGEMENT

Alexander, Lewis M. (Law of the Sea Inst., Rhode Island University, Kingston, R.I.) Report on Contract N00014-68-A-0215-0004, 399 pp. (January 1971). Available from the Law of the Sea Inst., University of Rhode Island, Kingston, R.I. 02881, Price \$7.50.

Government Reports Announcements 71, No. 12, 34 (June 25, 1971)

The volume contains nineteen professional papers, critiques of several of these shorter articles and commentaries by panel participants, and verbatim discussions covering the four-day conference. Major sub-headings are as follows: Activities of the United Nations General Assembly; Management of International Fisheries Arrangements; International Machinery for Seabed Development; The Intergovernmental Oceanographic Commission; The US Position on the Seabed; The Role of UN Agencies in Environmental Monitoring; Continuing Report on Boundaries; Case Studies in Regional Management; The North Sea, Anglo-America, Latin America. Among the contributed papers are one on policy recommendations regarding ocean mineral resources, on the European economic community, and on Soviet maritime law. (Author) Reprinted

COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 23

9.2
(9.3)

CONSUMERS, CLASS ACTIONS AND COSTS: AN ECONOMIC PERSPECTIVE ON DECEPTIVE ADVERTISING

Moewe, James A. (UCLA Law Review, University of California, Los Angeles, Calif.) UCLA Law Review 18, No. 3, 592-615 (February 1971)

The problem of deceptive advertising on national levels does not appear to justify the imposition of the social costs involved with federal consumer class actions. The problem can be most effectively dealt with at least cost to society by nonjudicial means. Rigorous information programs that have as their objective the creation of a more sophisticated and knowledgeable consumer populace could reduce the incidence of national market place deception (without imposing the high social costs associated with consumer class actions.)

The author indicated that the role of the government in the area of consumer protection, beyond dealing with instances of fraud, contamination, and clear dangers to the public health or safety, should be limited to complementing the efforts of business to supply product data to consumers. Further, those federal agencies charged with responsibility for consumer affairs can help resolve the deceptive advertising problem by coordinating the implementation of voluntary information programs and by providing data directly to consumers in those cases where free-market forces will not produce the desired result.

[102 footnotes]

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COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 23

9.6

THE ECOLOGY OF RUNNING WATERS

Hynes, H. B. N.
Published by University of Toronto Press, Toronto (1970); xxiv + 555 pp. \$25.
Kenneth W. Cummins (W. K. Kellogg Biological Station, Michigan State University, Hickory Corners, Mich. 49060) (reviewer)
Transactions of the American Fisheries Society 100, No. 3, 594-595 (July 1971)

The author has reviewed a massive amount of literature in this comprehensive treatment of running water; he cites over 1,500 references. His first three chapters set the physical-chemical stage for the major part of the book, which deals with the identity, morphology, and natural history-ecology of the organisms that inhabit lotic environments throughout the world. The last four chapters deal with longitudinal zonation, such special habitats as springs and intermittent streams, running waters as ecosystems, and man's impact on lotic systems. Animal trophic relations are the major theme throughout the book; about half the book deals with the ecology of lotic invertebrates. The areas of stream ecology that are ripe for future investigation are clearly indicated, the main problem area being the microbial portion of stream community structure and function.

The book has high-quality figures; useful tables; a conventional index; an index to organisms, arranged in their higher taxonomic categories and citing the pages where the species are discussed; and a bibliography giving the page locations of the reference citations.

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COMMERCIAL FISHERIES ABSTRACTS VOL 24 NO 11 PAGE 23

<p>9.2 (1.80)</p> <p>REGIONAL AND OTHER RELATED ASPECTS OF SHELLFISH CONSUMPTION -- SOME PRELIMINARY FINDINGS FROM THE 1969 CONSUMER PANEL SURVEY</p> <p>Miller, Morton M., and Darrel A. Nash (National Marine Fisheries Service, Division of Economic Research, College Park, Md. 20740)</p> <p>Circular 361, iv + 18 pp. (June 1971)</p> <p>A consumer survey panel, consisting of representative households throughout the United States, recorded their fishery product purchases for a 12-month period, beginning in February 1969. They were participants in a study conducted under the aegis of the National Marine Fisheries Service, Division of Economic Research. This paper deals mainly with study findings respecting the consumption of major species of shellfish, at home and away from home.</p> <p>Findings of the study indicate marked regional preferences for individual shellfish items. For example, oysters are consumed in South Atlantic States at nearly double the national per capita rate. Similarly, clams enjoy a high rate of consumption in Middle Atlantic and New England areas. All of which suggests an important correlation between consumption and tradition as well as a persistent tendency for seafood varieties, particularly those consumed in a "fresh" form, to be consumed in the area of catch.</p> <p>The study also indicated an association between high income households and shellfish consumption, with oysters a single notable exception. Age of consumer, too, has an apparent bearing on shellfish consumption as it was found that older consumers are the more disposed toward consumption of these products.</p> <p>With respect to consumption away from home, it appears that half or more of the crabs and lobsters are consumed in meals outside the home, but the majority consumed of other products was at home.</p> <p>[21 figures, 3 tables, 2 references, 10 appendices] Authors' abstract</p>	<p>9.6 (1.0152) (9.16)</p> <p>AQUICULTURE, VOL. 1, NO. 1</p> <p>The first issue of this new journal, published by the Tainan Fish Culture Station and the Tungkan Shrimp Culture Center of the Taiwan Fisheries Research Institute, came out in January 1970. It will appear at irregular intervals henceforth.</p> <p>This first 52-page issue includes the following articles, all in Chinese:</p> <p>The Tainan Fish Culture Station - a brief history and an account of its research activities</p> <p>The Tungkan Shrimp Culture Center - a brief introduction</p> <p>Some Fundamental Problems in Milkfish Culture</p> <p>Some Factors Regarding the Mortality of Milkfish during Overwinter Period - a detailed 6-month study of the effect of the stocking rate, the structure of the pond, and, in turn, the temperature of the pond on the mortality of milkfish fingerlings (with 18 figures, 7 tables, 3 references, and a short summary in English)</p> <p>Identification of Mated Female Specimens of Some Economical Prawns (4 figures)</p> <p>Prospects for Prawn Farming in Taiwan (1 table)</p> <p>The Problems of <i>Gracilaria</i> Culture in Taiwan (2 tables)</p> <p>Oyster Culture in Taiwan - a survey of its present status and future prospects</p> <p>Method of Organic Carbon Determination in the Breeding Water by the Persulphate Oxidation (2 figures, 3 tables, 1 reference)</p> <p>Bibliography of Research Papers from the Tainan Fish Culture Station, 1959-1969 (63 entries, plus 11 papers in English published through outside agencies)</p> <p>LB</p>
<p>9.19 (1.0155)</p> <p>A STUDY ON THE RADIOACTIVE CONTAMINATION OF MARINE PRODUCTS</p> <p>Chang, Dong-Suck, and Jeong-Nam Jun</p> <p>Bulletin of Fisheries Research & Development Agency No. 5, 7-15 (1970) (In Korean; figures, tables, and summary in English)</p> <p>The authors determined the concentration of radioactive material in 14 species of fish (yellow croaker, puffer, saury, jack mackerel, hair tail, yellow tail, "bastard," flounder, sea bream, shark, herring, and two species of anchovy), including squid; 4 species of shellfish (shrimp, oyster, sea mussel, and hen clam); and 5 species of seaweed (laver, kelp, the seaweed source of agar, and two species of dulse). The range of radioactive contamination was as follows:</p> <p>Sr90 in fish, 3.35-260.16 pCi/kg wet weight; in shellfish, 6.85-523.05 pCi/kg wet weight; in seaweed, 2.20-783.72 pCi/kg dry weight.</p> <p>Cel37 in fish, 1.53-67.83 pCi/kg wet weight; in shellfish, 0.57-7.24 pCi/kg wet weight; in seaweed, 2.44-63.77 pCi/kg dry weight.</p> <p>Gross β activity in fish, 75, 75-825.10 pCi/g ash; in shellfish, 31.50-109.00 pCi/g ash; in seaweed, 100.69-250.82 pCi/g ash.</p> <p>Contamination was slightly higher in surface fish than in bottom fish. Usually Sr90 was higher than Cel37. The level of gross β activity did not parallel that of either Sr90 or Cel37. Total radioactive accumulation was far below the maximum recommended by the International Commission on Radiological Protection.</p> <p>[3 figures, 4 tables, 12 references]</p> <p>LB</p>	<p>9.3 (9.19)</p> <p>THE POLLUTION PROBLEM AND LEGAL INSTITUTIONS: A CONCEPTUAL OVERVIEW</p> <p>Krier, James E. (University of California, Los Angeles, Calif.)</p> <p>UCLA Law Review 18, No. 3, 429-477 (February 1971)</p> <p>The purpose of the paper is to bring together knowledge about questions on the pollution problem and to construct a framework for thinking about pollution problems that has meaning for legal institutions. The 141 footnotes serve primarily a bibliographical function.</p> <p>FTP</p> <p>9.3 (9.4)</p> <p>THE FEDERAL GOVERNMENT AND ENVIRONMENTAL CONTROL: ADMINISTRATIVE REFORM ON THE EXECUTIVE LEVEL</p> <p>Donovan, Peter A. (Boston College Law School, Boston, Mass.)</p> <p>Boston College Industrial and Commercial Law Review 12, No. 4, 541-570 (March 1971)</p> <p>This article is a survey of developments at the administrative level relative to federal initiatives in environmental control and it gives particular emphasis to the National Environmental Policy Act of 1969.</p> <p>FTP</p>

4. INDUSTRIAL CHEMICAL USES OF POLYUNSATURATED FATTY ACIDS

Pryde, E. H., and J. C. Cowan (Northern Regional Research Laboratory, Agricultural Research Service, U.S. Department of Agriculture, Peoria, Ill. 61604) *Journal of the American Oil Chemists' Society* 48, No. 7, 349-354 (July 1971)

In 1967, the United States produced 54 billion lb. of petroleum crude products for chemical conversion (some 70% of these products was aliphatic hydrocarbons), these fossil oils having an average value of 3¢/lb. The following year, the United States produced 15 billion lb. of nonfossil oils, ranging in value from 3¢ to 39¢/lb. The largest part of the vegetable-animal-marine-oil production was directed toward human-food uses; the rest toward industrial and animal-feed uses. The authors give an overall view of (1) the consumption and use patterns for these latter oils and for their unsaturated fatty acids; (2) their industrial reactions (hydrogenation, interesterification, dimerization, sulfation, formation of nitrogen compounds, epoxidation, alkaline cleavage, and oxidative ozonolysis); and (3) the research being undertaken by the authors' agency to develop new reactions for potential industrial application, particularly the reductive ozonolysis of unsaturated fatty esters to produce monofunctional aldehydes and bifunctional aldehyde esters. [8 tables, 59 references] LB

6.14 EFFECTS OF OXYGEN DIFFUSION ON OXIDATION OF SOME DRY FOODS

Quast, Dietrich, and Marcus Karel (Department of Nutrition and Food Science, Massachusetts Institute of Technology, Cambridge, Mass.) *Journal of Food Technology* 6, No. 1, 95-106 (March 1971)

Oxidation uptake by a food product may be the result of respiration, enzymatic browning, or oxidation of lipids, proteins, vitamins, and other food components. In this work, the rate of oxygen uptake and the diffusion of oxygen in certain foods were determined. The diffusion of oxygen was determined for conditions that may occur during handling, processing, packaging, and storing.

Products examined were potato chips, fish meal (anchovy, from Chile), foam-spray-dried whole milk, and "Bugles," a commercial snack food.

The fish meal had a bulk density of 0.59 g./cm.³, a void fraction of 0.59, and an effective diffusivity of 0.05 cm.²/sec. at 37° C. The rate of oxygen uptake was 24 µl. O₂ STP/g. [S = solubility; T = temperature; P = partial pressure of oxygen] hr. at 37° C., with no induction period. The activation energy for oxygen uptake by the meal was 10 Kcal./g. mole. The oxygen uptake reaction in fish meal was first order over a wide range of oxygen partial pressures. [6 figures, 1 table, 11 references] FTP

7.85

QUICK COUNTING METHOD FOR ESTIMATING THE NUMBER OF VIABLE MICROBES ON FOOD AND FOOD PROCESSING EQUIPMENT

Winter, F. H., G. K. York, and Hamza El-Nakhal (Department of Food Science and Technology, University of California, Davis, Calif. 95616) *Applied Microbiology* 22, No. 1, 89-92 (July 1971)

The authors demonstrated how it is possible to observe microcolonies of bacteria that develop after 4 to 5 hr. of incubation by use of membrane filters to concentrate the microbial cells and a stain to make them visible. The method may be used for estimating the extent of microbial contamination on food and food processing equipment.

The bacteria are rinsed from food (or swab) samples with sterile diluent and then concentrated on the surface of membrane filters. The filters, placed on a sterile absorbant pad pretreated with a suitable bacteriological medium, are incubated for 4 hr. at 30° C. The strips are removed, heated at 105° C. for 5 min.; then stained with Janus green. The membranes are dried by exposure to 60° C. temperature for 5 min.; they are then rendered transparent with immersion oil and examined microscopically. Data obtained by this method were compared with data obtained by the standard plate count method, resulting in a correlation coefficient of 0.906.

[2 figures, 1 table, 6 references]

FTP

7.7 (0.7) THE NEW WAVE OF IMITATION FOODS: PROBLEMS AHEAD?

Warland, Rex H., and Robert O. Herrmann (Pennsylvania State University, University Park, Pa. 16802) *Journal of Consumer Affairs* 5, No. 1, 56-69 (Summer 1971)

Because consumers demand quick and easy meals and because of the economic and processing advantages of imitation ingredients, the number of products containing such ingredients will increase. This paper presents evidence that suggests that the consumer may not be in a position to protect himself from potential problems that may be created by imitation food products. The authors indicate that the solution to the problem may be a combination of enlightened federal regulation of labeling and advertising practices and extensive consumer education programs. [6 tables, 16 references] FTP

[7 figures, 1 table, about 72 references]

FTP

FTP

This article describes the basic aspects of selective dissemination of information (SDI) systems. Two approaches to indexing information for SDI systems are discussed. The author emphasizes the desirability of using enumerative hierarchical classifications of scientific information to achieve a high degree of selectivity in the information required to satisfy the needs of the user.

[Schneider, John H. (National Cancer Institute, U.S. Department of Health, Education and Welfare, Bethesda, Md. 20014) *Science* 173, No. 3994, 300-308 (July 23, 1971)]

9.7 SELECTIVE DISSEMINATION AND INDEXING OF SCIENTIFIC INFORMATION

Subject	Page	Code	Subject	Page	Code
ANALYSIS, GENERAL			FISHING METHODS		
General Considerations of Electrophoresis			Midwater Trawling. A Manual	9	2.1471
ANALYSIS, ORGANIC			Trapping Sablefish	11	2.1474
An Immunofluorescent Technique for Detecting <u>Aeromonas liquefaciens</u> in Fish Utilized in Lunar Exposure Studies			FOOD TECHNOLOGY	11	2.1475
AUTHOR INDEX			The PRO-XAN Process: The Design and Evaluation of a Pilot Plant System for the Coagulation and Separation of the Leaf Protein From Alfalfa Juice	3	0.6
BACTERIOLOGY			Controlling the Fat and Moisture Content of Sausage	4	0.6
Accumulation and Elimination of Coliphage S-13 by the Hard Clam, <u>Mer-</u> <u>cenaria mercenaria</u>	3	0.5	Computer Prediction of Food Storage	6	0.9
The Isolation of <u>Vibrio parahaemolyticus</u> and Related Halophilic Bac- teria From Canadian Atlantic Shellfish	3	0.5	Observations on the Sporicidal Action of Vegetable Oils Used in Fish Canning	13	3.30
Salt Tolerance of Intertidal Marine Bacteria	4	0.5	FROZEN FISH, PROCESSING		
Taxonomy of Marine Bacteria: the Genus <u>Benecke</u>	4	0.5	Pasteurized Fish-Block (pat.)	13	3.2
Technical Note: Temperature Control of Food	8	2.05	Method of Butchering Tuna (pat.)	14	3.23
A Semi-Quantitative Procedure for Detecting <u>Clostridium welchii</u> in Food- stuffs	16	7.86	[Food Freezer] (pat.)	14	3.234
Quick Counting Method for Estimating the Number of Viable Microbes on Food and Food Processing Equipment	25	7.85	GEAR, FISHING		
BIOCHEMISTRY AND METABOLISM OF FISH			Gear and Techniques Employed in the Gulf of Mexico Shrimp Fishery	7	2.1121
Effect of Temperature and Acclimation Upon FFA Levels in Three Species of Rodents	19	9.13	Handbook of Knots	8	2.111
Dependence of the Enzymic Activities in the Trunk Muscles of Golden Orfes (<u>Idus idus</u>) on the Adaptation Temperature	20	9.13	Knowledge Gap	9	2.1121
Glycoproteins as Biological Antifreeze Agents in Antarctic Fishes	20	9.13	HANDLING FRESH FISH		
Liver Triglyceride Synthesis Failure in Post-Spawning Salmon	20	9.13	Shetland Gutting Machines		
BOOKS AND JOURNALS			First Year With the Type 28	9	2.114
Aquaculture, Vol. 1, No. 1	24	9.6	Three Years With the Type 17	9	2.114
BYPRODUCTS, MISCELLANEOUS			Cleaning Apparatus for Fish (pat.)	10	2.3
Yeast Protein From Hydrocarbon Fermentation	4	0.6	Process for Grading Fish (pat.)	10	2.3
CANNED FISH, PROCESSING			Device for Aligning Prawns in the Conveyor of a Prawn Processing Machine (pat.)	11	2.3
Method of Processing Tuna (pat.)	14	3.331	Device for Turning Crooked Prawns in the Conveyor of a Prawn Processing Machine (pat.)	11	2.3
Multipurpose Cooker Method (pat.)	14	3.331	Fish Deodorization (pat.)	11	2.3
CHEMISTRY AND BIOCHEMISTRY			Fish Scaling Device (pat.)	11	2.3
Platelet Lipids: Effects of a High Fat or a High Carbohydrate Diet in Pig Plasma and Platelet Fatty Acid Composition	1	0.35	Microwave Process for Shucking Bivalve Mollusks (pat.)	11	2.3
Symposium on Characterization of Proteins	1	0.320	Bivalve Processing (pat.)	12	2.3
Automated Sequence Analysis of Proteins and Peptides	1	0.320	Device for Securing and Re-delivering Prawns to the Conveyor of a Prawn Processing Machine (pat.)	12	2.3
Columns for Large-Scale Gel Filtration on Porous Gels. Fractionation of Rape Seed Proteins and Insulin	1	0.320	Device for Sorting Out Undesirable Prawns or Parts of Prawns From the Conveyor of a Prawn Processing Machine (pat.)	12	2.3
Gel Chromatography in Denaturing Solvents: A Method for the Study of Protein Subunit Composition	1	0.320	Fish Preservation (pat.)	12	2.15
Immunochemical Characterization of Protein in Plant Studies	1	0.320	LANCET FISH		
Introduction	1	0.320	[Contribution to the Knowledge About <u>Alepisaurus</u> (Pisces) in the Equa- torial and South Tropic Pacific]	7	1.9
Liquid Crystals as They Relate to the Structure of Proteins	1	0.320	LOBSTERS		
Membrane Partition Chromatography: A Tool for Fractionation of Protein Mixtures	1	0.320	Aggregations of Spiny Sea Urchins, <u>Diadema antillarum</u> , as Shelter for Young Spiny Lobsters, <u>Panulirus argus</u>	8	1.87
Protein Aggregation as Studied by Sedimentation Equilibrium. Recent Developments in Instrumentation and Theory	1	0.320	NEW PRODUCTS		
Testing for Purity in Proteins by Gel Electrophoresis	1	0.320	Jellied Fish Product (pat.)	8	2.06
Characterization of Proteins by Nuclear Magnetic Resonance	2	0.320	NUTRITION AND MEDICINE, GENERAL		
Disulfide Bonds: Determination, Location, and Influence on Molecular Properties of Proteins	2	0.320	Losses of Vitamins and Trace Minerals Resulting From Processing and Preservation of Foods	3	0.7
Electric Birefringence of Macromolecular Suspensions	2	0.320	Protein Deprivation: Comparative Response of Hair Roots, Serum Protein, and Urinary Nitrogen	5	0.7
Functional Purification of Proteins and Peptides by Affinity Chro- matography	2	0.320	OCEANOGRAPHY		
Laser Raman Spectroscopy of Biopolymers and Proteins	2	0.320	Studies on the Formation of Demersal Fishing Grounds. 2. Analytical Studies on the Effect of the Wind on the Spreading of Water Masses in the Eastern Bering Sea	17	9.11
Methods of Tryptophan Analysis	2	0.320	Correlations Between Some Hydrochemical and Hydrophysical Character- istics of Sea Water Masses	18	9.11
Protein Topography by Calorimetry	2	0.320	Magnesium-Iron Replacement in Clay Minerals in Anoxic Marine Sediments	18	9.11
Quantitative Amino Acid Analysis by Gas-Liquid Chromatography	2	0.320	Oceanography -- An Introduction to the Marine Environment	19	9.11
Selective Cleavage of Proteins	2	0.320	OILS, GENERAL		
The Use of Small-Angle X-Ray Scattering to Determine Protein Confor- mation	2	0.320	Industrial Chemical Uses of Polyunsaturated Fatty Acids	25	4.

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